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I

A CENTURY'S PROGRESS IN SCIENCE[1]

I do not propose to weary you by what in my hands would be the rash effort of attempting a survey of all the scientific results of the nineteenth century. It will be enough if for a little while I dwell on some few of the salient features distinguishing the way in which we nowadays look upon, and during the coming week shall speak of, the works of nature around us —tho those works themselves, save for the slight shifting involved in a secular change, remain exactly the same—from the way in which they were looked upon and might have been spoken of at a gathering of philosophers at Dover in 1799. And I ask your leave to do so.

In the philosophy of the ancients, earth, fire, air, and water were called "the elements." It was thought, and rightly thought, that a knowledge of them and of their attributes was a necessary basis of a knowledge of the ways of nature. Translated into modern language, a knowledge of these "elements" of old means a knowledge of the composition of the atmosphere, of water, and of all the other things which we call matter, as well as a knowledge of the general properties of gases, liquids, and solids, and of the nature and effects of combustion. Of all these things our knowledge to-day is large and

[1] From the Presidential Address by Sir Michael Foster, K. C. B., F. R. S., professor of physiology in the University of Cambridge, to the British Association at Dover, September 13, 1899.

exact, and, tho ever enlarging, in some respects complete. When did that knowledge begin to become exact?

To-day the children in our schools know that the air which wraps round the globe is not a single thing, but is made up of two things, oxygen and nitrogen, mingled together. They know, again, that water is not a single thing, but the product of two things, oxygen and hydrogen, joined together. They know that when the air makes the fire burn and gives the animal life, it is the oxygen in it which does the work. They know that all round them things are undergoing that union with oxygen which we call oxidation, and that oxidation is the ordinary source of heat and light. Let me ask you to picture to yourselves what confusion there would be to-morrow, not only in the discussions at the sectional meetings of our association, but in the world at large, if it should happen that in the coming night some destroying touch should wither up certain tender structures in all our brains, and wipe out from our memories all traces of the ideas which cluster in our minds around the verbal tokens, oxygen and oxidation. How could any of us, not the so-called man of science alone, but even the man of business and the man of pleasure, go about his ways lacking those ideas? Yet those ideas were in 1799 lacking to all but a few.

Altho in the third quarter of the seventeenth century the light of truth about oxidation and combustion had flashed out in the writings of John Mayow, it came as a flash only, and died away as soon as it had come. For the rest of that century, and for the greater part of the next, philosophers stumbled about in darkness, misled for the most of the time by the phantom conception which they called phlogiston. It was not until the end of the third quarter of the eighteenth century that the new light, which has burned steadily ever since, lit up the minds of the men of science. The light came at nearly the same time from England and from France. Rounding off the sharp corners of controversy, and joining, as we may fitly do to-day, the two countries as twin bearers of a common crown, we may say that we owe the truth to Cavendish, to Lavoisier, and Priestley. If it was Priestley who was the first

to demonstrate the existence of what we now call oxygen, it is to Lavoisier we owe the true conception of the nature of oxidation and the clear exposition of the full meaning of Priestley's discovery, while the knowledge of the composition of water, the necessary complement of the knowledge of oxygen, came to us thru Cavendish and, we may perhaps add, thru Watt.

The date of Priestley's discovery of oxygen is 1774, Lavoisier's classic memoir *On the nature of the principle which enters into combination with metals during calcination* appeared in 1775, and Cavendish's paper on the composition of water did not see the light until 1784.

During the last quarter of the eighteenth century this new idea of oxygen and oxidation was struggling into existence. How new was the idea is illustrated by the fact that Lavoisier himself at first spoke of that which he was afterward, namely in 1778, led to call oxygen, the name by which it has since been known, as " the principle which enters into combination." What difficulties its acceptance met with is illustrated by the fact that Priestley himself refused to the end of his life to grasp the true bearings of the discovery which he had made. In the year 1799 the knowledge of oxygen, of the nature of water and of air, and indeed the true conception of chemical composition and chemical change, was hardly more than beginning to be, and the century had to pass wholly away before the next great chemical idea, which we know by the name of the atomic theory of John Dalton, was made known. We have only to read the scientific literature of the time to recognize that a truth which is now not only woven as a master-thread into all our scientific conceptions, but even enters largely into the every-day talk and thoughts of educated people, was a hundred years ago struggling into existence among the philosophers themselves. It was all but absolutely unknown to the large world outside those select few.

If there be one word of science which is writ large on the life of the present time, it is the word " electricity "; it is, I take it, writ larger than any other word. The knowledge which it denotes has carried its practical results far and wide into our daily life, while the theoretical conceptions which it signifies

pierce deep into the nature of things. We are to-day proud, and justly proud, both of the material triumphs and of the intellectual gains which it has brought us, and we are full of even larger hopes of it in the future.

At what time did this bright child of the nineteenth century have its birth?

He who listened to the small group of philosophers of Dover, who in 1799 might have discoursed of natural knowledge, would perhaps have heard much of electric machines, of electric sparks, of the electric fluid, and even of positive and negative electricity; for frictional electricity had long been known and carefully studied. Probably one or more of the group, dwelling on the observations which Galvani, an Italian, had made known some twenty years before, developed views on the connection of electricity with the phenomena of living bodies. Possibly one of them was exciting the rest by telling how he had just heard that a professor at Pavia, one Volta, had discovered that electricity could be produced not only by rubbing together particular bodies, but by the simple contact of two metals, and had thereby explained Galvani's remarkable results. For, indeed, it was in that very year, 1799, that electricity, as we now know it, took its birth. It was then that Volta brought to light the apparently simple truths out of which so much has sprung. The world, it is true, had to wait for yet some twenty years before both the practical and the theoretic worth of Volta's discovery became truly pregnant, under the fertilizing influence of another discovery. The loadstone and magnetic virtues had, like the electrifying power of rubbed amber, long been an old story. But, save for the compass, not much had come from it. And even Volta's discovery might have long remained relatively barren had it been left to itself. When, however, in 1819, Oersted made known his remarkable observations on the relations of electricity to magnetism, he made the contact needed for the flow of a new current of ideas. And it is perhaps not too much to say that those ideas, developing during the years of the rest of the century with an ever-accelerating swiftness, have wholly changed man's material relations to the circumstances of life,

and at the same time carried him far in his knowledge of the nature of things.

Of all the various branches of science, none perhaps is to-day, none for these many years past has been, so well-known to, even if not understanded by, most people as that of geology. Its practical lessons have brought wealth to many; its fairy tales have brought delight to more; and round it hovers the charm of danger, for the conclusions to which it leads touch on the nature of man's beginning.

In 1799 the science of geology, as we now know it, was struggling into birth. In 1783 James Hutton put forward in a brief memoir, his *Theory of the earth*, which in 1795, two years before his death, he expanded into a book; but his ideas failed to lay hold of men's minds until the century had passed away, when, in 1802, they found an able expositor in John Playfair. The very same year that Hutton published his theory, Cuvier came to Paris, almost and forthwith began, with Brogniart, his immortal researches into the fossils of Paris and its neighborhood. About four years later, in the year 1799 itself, William Smith's tabular list of strata and fossils saw the light. It is, I believe, not too much to say that out of these geology, as we now know it, sprang. It was thus in the closing years of the eighteenth century that was begun the work which the nineteenth century has carried forward to such great results. But at that time only the select few had grasped the truth, and even they only the beginning of it. Outside a narrow circle the thoughts, even of the educated, about the history of the globe were bounded by the story of the Deluge—tho the story was often told in a strange fashion—or were guided by fantastic views of the plastic forces of a sportive nature.

In another branch of science, in that which deals with the problems presented by living beings, the thoughts of men in 1799 were also very different from the thoughts of men of to-day. It is a very old quest, the quest after the knowledge of the nature of living beings,—one of the earliest on which man set out, for it promised to lead him to a knowledge of himself, a promise which perhaps is still before us, but the fulfillment

of which is as yet far off. As time has gone on, the pursuit of natural knowledge has seemed to lead man away from himself into the furthermost parts of the universe, and into secret workings of nature in which he appears to be of little or no account; and his knowledge of the nature of living things, and so of his own nature, has advanced slowly, waiting till the progress of other branches of natural knowledge can bring it aid. Yet in the past hundred years the biologic sciences, as we now call them, have marched rapidly onward.

We may look upon a living body as a machine doing work in accordance with certain laws, and may seek to trace out the working of the inner wheels, how these raise up the lifeless dust into living matter, and let the living matter fall away again into dust, giving out movement and heat. Or we may look upon the individual life as a link in a long chain, joining something which went before to something about to come, a chain whose beginning lies hid in the farthest past, and may seek to know the ties which bind one life to another. As we call up to view the long series of living forms, living now or flitting like shadows on the screen of the past, we may strive to lay hold of the influences which fashion the garment of life. Whether the problems of life are looked upon from the one point of view or the other, we to-day, not biologists only, but all of us, have gained a knowledge hidden even from the philosophers a hundred years ago.

Of the problems presented by the living body viewed as a machine, some may be spoken of as mechanical, others as physical, and yet others as chemical, while some are, apparently, at least, none of these. In the seventeenth century William Harvey, laying hold of the central mechanism of the blood stream, opened up a path of inquiry which his own age and the century which followed trod with marked success. The knowledge of the mechanics of the animal and of the plant advanced apace; but the physical and chemical problems had yet to wait. The eighteenth century, it is true, had its physics and its chemistry; but, in relation at least to the problems of the living being, a chemistry which knew not oxygen and a physics which knew not the electricity of chemical action were of little

avail. The philosopher of 1799, when he discussed the functions of the animal or of the plant involving chemical changes, was fain for the most part, as were his predecessors in the century before, to have recourse to such vague terms as "fermentation," and the like; to-day our treatises on physiology are largely made up of precise and exact expositions of the play of physical agencies and chemical bodies in the living organism. He made use of the words "vital force" or "vital principle," not as an occasional, but as a common, explanation of the phenomena of the living body. During the present century, especially during its latter half, the idea embodied in those words has been driven away from one seat after another; if we use it now when we are dealing with the chemical and physical events of life we use it with reluctance, as a *deus ex machina* to be appealed to only when everything else has failed.

Some of the problems—and those, perhaps, the chief problems—of the living body have to be solved neither by physical nor by chemical methods, but by methods of their own. Such are the problems of the nervous system. In respect to these the men of 1799 were on the threshold of a pregnant discovery. During the latter part of the present century, and especially during its last quarter, the analysis of the mysterious processes in the nervous system, and especially in the brain, which issue as feeling, thought, and the power to move, has been pushed forward with a success conspicuous in its pracical, and full of promise in its theoretical, gains. That analysis may be briefly described as a following up of threads. We now know that what takes place along a tiny thread which we call a nerve-fiber differs from that which takes place along its fellow-threads, that differing nervous impulses travel along different nerve-fibers, and that nervous and psychical events are the outcome of the clashing of nervous impulses as they sweep along the closely-woven web of living threads of which the brain is made. We have learned by experiment and by observation that the pattern of the web determines the play of the impulses, and we can already explain many of the obscure problems not only of nervous disease, but of nervous life, by an analysis which is a tracking out the devious and linked

paths of nervous threads. The very beginning of this analysis was unknown in 1799. Men knew that nerves were the agents of feeling and of the movements of muscles; they had learned much about what this part or that part of the brain could do; but they did not know that one nerve-fiber differed from another in the very essence of its work. It was just about the end of the past century, or the beginning of the present one, that an English surgeon began to ponder over a conception which, however, he did not make known until some years later, and which did not gain complete demonstration and full acceptance until still more years had passed away. It was in 1811, in a tiny pamphlet published privately, that Charles Bell put forward his "new idea" that the nervous system was constructed on the principle that "the nerves are not single nerves possessing various powers, but bundles of different nerves, whose filaments are united for the convenience of distribution, but which are distinct in office as they are in origin from the brain." Our present knowledge of the nervous system is to a large extent only an exemplification and expansion of Charles Bell's "new idea," and has its origin in that.

If we pass from the problems of the living organism viewed as a machine to those presented by the varied features of the different creatures who have lived or who still live on the earth, we at once call to mind that the middle years of the present century mark an epoch in biologic thought such as never came before, for it was then that Charles Darwin gave to the world the *Origin of species*. That work, however, with all the far-reaching effects which it has had, could have little or no effect, or, rather, could not have come into existence, had not the earlier half of the century been in travail preparing for its coming. For the germinal idea of Darwin appeals, as to witnesses, to the results of two lines of biologic investigation which were almost unknown to the men of the eighteenth century. To one of these lines I have already referred. Darwin, as we know, appealed to the geological record; and we also know how that record, imperfect as it was then, and imperfect as it must always remain, has since his time yielded the most striking proofs of at least one part of his general conception.

In 1799 there was, as we have seen, no geological record at all.

Of the other line I must say a few words.

To-day the merest beginner in biologic study, or even that exemplar of acquaintance without knowledge, the general reader, is aware that every living being, even man himself, begins its independent existence as a tiny ball, of which we can, even acknowledging to the full the limits of the optical analysis at our command, assert with confidence that in structure, using that word in its ordinary sense, it is in all cases absolutely simple. It is equally well known that the features of form which supply the characters of a grown-up living being, all the many and varied features of even the most complex organism, are reached as the goal of a road, at times a long road, of successive changes; that the life of every being, from the ovum to its full estate, is a series of shifting scenes, which come and go, sometimes changing abruptly, sometimes melting the one into the other, like dissolving views, all so ordained that often the final shape with which the creature seems to begin, or is said to begin, its life in the world is the outcome of many shapes, clothed with which it in turn has lived many lives before its seeming birth.

If we wish to measure how far off in biologic thought the end of the last century stands, not only from the end but even from the middle of this one, we may imagine Darwin striving to write the *Origin of species* in 1799. We may fancy him being told by philosophers explaining how one group of living beings differed from another group because all its members and all their ancestors came into existence at one stroke when the first-born progenitor of the race, within which all the rest were folded up, stood forth as the result of a creative act. We may fancy him listening to a debate between the philosopher who maintained that all the fossils strewn in the earth were the remains of animals or plants churned up in the turmoil of a violent universal flood, and dropped in their places as the waters went away, and him who argued that such were not really the "spoils of living creatures," but the products of some playful plastic power which out of the superabundance of its

energy fashioned here and there the lifeless earth into forms which imitated, but only imitated, those of living things. Could he amid such surroundings by any flight of genius have beat his way to the conception for which his name will ever be known?

Here I may well turn away from the past. It is not my purpose, nor, as I have said, am I fitted, nor is this perhaps the place, to tell even in outline the tale of the work of science in the nineteenth century. I am content to have pointed out that the two great sciences of chemistry and geology took their birth, or at least began to stand alone, at the close of the last century, and have grown to be what we know them now within about a hundred years, and that the study of living beings has within the same time been so transformed as to be to-day something wholly different from what it was in 1799. And, indeed, to say more would be to repeat almost the same story about other things. If our present knowledge of electricity is essentially the child of the nineteenth century, so also is our present knowledge of many other branches of physics. And those most ancient forms of exact knowledge, the knowledge of numbers and of the heavens, whose beginning is lost in the remote past, have, with all other kinds of natural knowledge, moved onward during the whole of the hundred years with a speed which is ever increasing. I have said, I trust, enough to justify the statement that in respect to natural knowledge a great gulf lies between 1799 and 1899. The gulf, moreover, is a twofold one; not only has natural knowledge been increased, but men have run to and fro spreading it as they go. Not only have the few driven far back round the full circle of natural knowledge the dark clouds of the unknown which wrapped us all about, but also the many walk in the zone of light thus increasingly gained. If it be true that the few to-day are, in respect to natural knowledge, far removed from the few of those days, it is also true that nearly all which the few alone knew then, and much which they did not know, has now become the common knowledge of the many.

What, however, I may venture to insist upon here is that the difference in respect to natural knowledge, whatever be the

case with other differences between then and now, is undoubtedly a difference which means progress. The span between the science of that time and the science of to-day is beyond all question a great stride onward.

We may say this, but we must say it without boasting. For the very story of the past which tells of the triumphs of science bids the man of science put away from him all thoughts of vain-glory. And that by many tokens.

Whoever, working at any scientific problem, has occasion to study the inquiries into the same problem made by some fellow-worker in the years long gone by, comes away from that study humbled by one or other of two different thoughts. On the one hand he may find, when he has translated the language of the past into the phraseology of to-day, how near was his forerunner of old to the conception which he thought, with pride, was all his own, not only so true but so new. On the other hand, if the ideas of the investigator of old, viewed in the light of modern knowledge, are found to be so wide of the mark as to seem absurd, the smile which begins to play upon the lips of the modern is checked by the thought, Will the ideas which I am now putting forth, and which I think explain so clearly, so fully, the problem in hand, seem to some worker in the far future as wrong and as fantastic as do these of my forerunner to me? In either case his personal pride is checked. Further, there is written clearly on each page of the history of science, in characters which cannot be overlooked, the lesson that no scientific truth is born anew, coming by itself and of itself. Each new truth is always the offspring of something which has gone before, becoming in turn the parent of something coming after. In this aspect the man of science is unlike, or seems to be unlike, the poet and the artist. The poet is born, not made; he rises up, no man knowing his beginnings; when he goes away, tho men after him may sing his songs for centuries, he himself goes away wholly, having taken with him his mantle, for this he can give to none other. The man of science is not thus creative; he is created. His work, however great it be, is not wholly his own; it is in part the outcome of the work of men who have gone before. Again and again

a conception which has made a name great has come not so much by the man's own effort as out of the fullness of time. Again and again we may read in the words of some man of old the outlines of an idea which in later days has shone forth as a great acknowledged truth. From the mouth of the man of old the idea dropped barren, fruitless; the world was not ready for it, and heeded it not; the concomitant and abutting truths which could give it power to work were wanting. Coming back again in later days, the same idea found the world awaiting it; things were in travail preparing for it; and someone, seizing the right moment to put it forth again, leaped into fame. It is not so much the men of science who make science, as some spirit which, born of the truths already won, drives the man of science onward and uses him to win new truths in turn.

It is because each man of science is not his own master, but one of many obedient servants of an impulse which was at work long before him, and will work long after him, that in science there is no falling back. In respect to other things there may be times of darkness and times of light, there may be risings, decadences, and revivals. In science there is only progress. The path may not be always a straight line, there may be swerving to this side and to that, ideas may seem to return again and again to the same point of the intellectual compass; but it will always be found that they have reached a higher level—they have moved, not in a circle, but in a spiral. Moreover, science is not fashioned as is a house, by putting brick to brick, that which is once put remaining as it was put to the end. The growth of science is that of a living being. As in the embryo phase follows phase, and each member of the body puts on in succession different appearances, tho all the while the same member, so a scientific conception of one age seems to differ from that of a following age, tho it is the same one in the process of being made; and as the dim outlines of the early embryo become, as the being grows more distinct and sharp, like a picture on a screen brought more and more into focus, so the dim gropings and searchings of the men of

science of old are by repeated approximations wrought into the clear and exact conclusions of later times.

The story of natural knowledge, of science, in the nineteenth century, as, indeed, in preceding centuries, is, I repeat, a story of continued progress. There is in it not so much as a hint of falling back, not even of standing still. What is gained by scientific inquiry is gained forever; it may be added to, it may seem to be covered up, but it can never be taken away. Confident that the progress will go on, we cannot help peering into the years to come and straining our eyes to foresee what science will become and what it will do as they roll on. While we do so, the thought must come to us, Will all the increasing knowledge of nature avail only to change the ways of man—will it have no effect on man himself?

The material good which mankind has gained and is gaining thru the advance of science is so imposing as to be obvious to everyone, and the praises of this aspect of science are to be found in the mouths of all. Beyond all doubt science has greatly lessened and has markedly narrowed hardship and suffering; beyond all doubt science has largely increased and has widely diffused ease and comfort. The appliances of science have, as it were, covered with a soft cushion the rough places of life, and that not for the rich only, but also for the poor. So abundant and so prominent are the material benefits of science that in the eyes of many these seem to be the only benefits which she brings. She is often spoken of as if she were useful and nothing more, as if her work were only to administer to the material wants of man.

Is this so?

We may begin to doubt it when we reflect that the triumphs of science which bring these material advantages are in their very nature intellectual triumphs. The increasing benefits brought by science are the results of man's increasing mastery over nature, and that mastery is increasingly a mastery of mind; it is an increasing power to use the forces of what we call inanimate nature in place of the force of his own or other

creatures' bodies; it is an increasing use of mind in place of muscle.

Is it to be thought that that which has brought the mind so greatly into play has had no effect on the mind itself? Is that part of the mind which works out scientific truths a mere slavish machine producing results it knows not how, having no part in the good which in its working it brings forth?

What are the qualities, the features of that scientific mind which has wrought, and is working, such great changes in man's relation to nature? In seeking an answer to this question we have not to inquire into the attributes of genius. Tho much of the progress of science seems to take on the form of a series of great steps, each made by some great man, the distinction in science between the great discoverer and the humble worker is one of degree only, not of kind. As I was urging just now, the greatness of many great names in science is often, in large part, the greatness of occasion, not of absolute power. The qualities which guide one man to a small truth silently taking its place among its fellows, as these go to make up progress, are at bottom the same as those by which another man is led to something of which the whole world rings.

The features of the fruitful scientific mind are in the main three.

In the first place, above all other things, his nature must be one which vibrates in unison with that of which he is in search; the seeker after truth must himself be truthful, truthful with the truthfulness of nature. For the truthfulness of nature is not wholly the same as that which man sometimes calls truthfulness. It is far more imperious, far more exacting. Man, unscientific man, is often content with "the nearly" and "the almost." Nature never is. It is not her way to call the same two things which differ, tho the difference may be measured by less than the thousandth of a milligramme or of a millimeter, or by any other like standard of minuteness. And the man who, carrying the ways of the world into the domain of science, thinks that he may treat nature's differences in any other way than she treats them herself, will find that she resents his conduct; if he in carelessness or in disdain overlooks the

minute difference which she holds out to him as a signal to guide him in his search, the projecting tip, as it were, of some buried treasure, he is bound to go astray, and the more strenuously he struggles on the farther will he find himself from his true goal.

In the second place, he must be alert of mind. Nature is ever making signs to us, she is ever whispering to us the beginnings of her secrets; the scientific man must be ever on the watch, ready at once to lay hold of nature's hint however small, to listen to her whisper however low.

In the third place, scientific inquiry, tho it be pre-eminently an intellectual effort, has need of the moral quality of courage —not so much the courage which helps a man to face a sudden difficulty as the courage of steadfast endurance. Almost every inquiry, certainly every prolonged inquiry, sooner or later goes wrong. The path, at first so straight and clear, grows crooked and gets blocked: the hope and enthusiasm, or even the jaunty ease, with which the inquirer set out, leave him, and he falls into a slough of despond. That is the critical moment calling for courage. Struggling thru the slough he will find on the other side the wicket-gate opening up the real path; losing heart he will turn back and add one more stone to the great cairn of the unaccomplished.

But, I hear someone say, these qualities are not the peculiar attributes of the man of science; they may be recognized as belonging to almost everyone who has commanded or deserved success, whatever may have been his walk of life. That is so. That is exactly what I would desire to insist, that the men of science have no peculiar virtues, no special powers. They are ordinary men, their characters are common, even commonplace. Science, as Huxley said, is organized common sense, and men of science are common men, drilled in the ways of common sense.

For their life has this feature. Tho in themselves they are no stronger, no better than other men, they possess a strength which, as I just now urged, is not their own, but is that of the science whose servants they are. Even in his apprenticeship, the scientific inquirer, while learning what has been done

before his time, if he learns it aright, so learns it that what is known may serve him not only as a vantage-ground whence to push off into the unknown, but also as a compass to guide him in his course. And when fitted for his work he enters on inquiry itself, what a zealous, anxious guide, what a strict and, because strict, helpful schoolmistress does nature make herself to him! Under her care every inquiry, whether it bring the inquirer to a happy issue or seem to end in naught, trains him for the next effort. She so orders her ways that each act of obedience to her makes the next act easier for him, and step by step she leads him on toward that perfect obedience which is complete mastery.

Indeed, when we reflect on the potency of the discipline of scientific inquiry we cease to wonder at the progress of scientific knowledge. The results actually gained seem to fall so far short of what under such guidance might have been expected to have been gathered in that we are fain to conclude that science has called to follow her, for the most part, the poor in intellect and the wayward in spirit. Had she called to her service the many acute minds who have wasted their strength struggling in vain to solve hopeless problems, or who have turned their energies to things other than the increase of knowledge; had she called to her service the many just men who have walked straight without the need of a rod to guide them, how much greater than it has been would have been the progress of science, and how many false teachings would the world have been spared! To men of science themselves, when they consider their favored lot, the achievements of the past should serve not as a boast, but as a reproach.

If there be any truth in what I have been urging, that the pursuit of scientific inquiry is itself a training of special potency, giving strength to the feeble and keeping in the path those who are inclined to stray, it is obvious that the material gains of science, great as they may be, do not make up all the good which science brings or may bring to man. We especially, perhaps, in these later days, thru the rapid development of the physical sciences, are too apt to dwell on the material gains alone. As a child in its infancy looks upon its mother

only as a giver of good things, and does not learn till in after days how she was also showing her love by carefully training it in the way it should go, so we, too, have thought too much of the gifts of science, overlooking her power to guide.

Man does not live by bread alone, and science brings him more than bread. It is a great thing to make two blades of grass grow where before one alone grew; but it is no less great a thing to help a man to come to a just conclusion on the questions with which he has to deal. We may claim for science that while she is doing the one she may be so used as to do the other also. The dictum just quoted, that science is organized common sense, may be read as meaning that the common problems of life which common people have to solve are to be solved by the same methods by which the man of science solves his special problems. It follows that the training which does so much for him may be looked to as promising to do much for them. Such aid can come from science on two conditions only. In the first place, this her influence must be acknowledged; she must be duly recognized as a teacher no less than as a hewer of wood and a drawer of water. And the pursuit of science must be followed not by the professional few only, but, at least in such measure as will insure the influence of example, by the many. But this latter point I need not urge before this great association, whose chief object during more than half a century has been to bring within the fold of science all who would answer to the call. In the second place, it must be understood that the training to be looked for from science is the outcome, not of the accumulation of scientific knowledge, but of the practice of scientific inquiry. Man may have at his fingers' ends all the accomplished results and all the current opinions of any one or of all the branches of science, and yet remain wholly unscientific in mind; but no one can have carried out even the humblest research without the spirit of science in some measure resting upon him. And that spirit may in part be caught even without entering upon an actual investigation in search of a new truth. The learner may be led to old truths, even the oldest, in more ways than one. He may be brought abruptly to a truth in its finished form,

coming straight to it like a thief climbing over the wall; and the hurry and press of modern life tempt many to adopt this quicker way. Or he may be more slowly guided along the path by which the truth was reached by him who first laid hold of it. It is by this latter way of learning the truth, and by this alone, that the learner may hope to catch something at least of the spirit of the scientific inquirer.

This is not the place, nor have I the wish, to plunge into the turmoil of controversy; but, if there be any truth in what I have been urging, then they are wrong who think that in the schooling of the young science can be used with profit only to train those for whom science will be the means of earning their bread. It may be that from the point of view of the pedagogic art the experience of generations has fashioned out of the older studies of literature an instrument of discipline of unusual power, and that the teaching of science is as yet but a rough tool in unpracticed hands. That, however, is not an adequate reason why scope should not be given for science to show the value which we claim for it as an intellectual training fitted for all sorts and conditions of men. Nor need the studies of humanity and literature fear her presence in the schools, for if her friends maintain that that teaching is one-sided, and therefore misleading, which deals with the doings of man only, and is silent about the works of nature, in the sight of which he and his doings shrink almost to nothing, she herself would be the first to admit that that teaching is equally wrong which deals only with the works of nature and says nothing about the doings of man, who is, to us at least, nature's center.

Looking back, then, in this last year of the eighteen hundreds, on the century which is drawing to its close, while we may see in the history of scientific inquiry much which, telling the man of science of his shortcomings and his weakness, bids him be humble, we also see much, perhaps more, which gives him hope. Hope is indeed one of the watchwords of science. In the latter-day writings of some who know not science, much may be read which shows that the writer is losing or has lost hope in the future of mankind. There are not a few of these; their repeated utterances make a sign of the times. Seeing in

matters lying outside science few marks of progress and many tokens of decline or of decay, recognizing in science its material benefits only, such men have thoughts of despair when they look forward to the times to come. But if there be any truth in what I have attempted to urge to-night; if the intellectual, if the moral influences of science are no less marked than her material benefits; if, moreover, that which she has done is but the earnest of that which she shall do, such men may pluck up courage and gather strength by laying hold of her garment. We men of science at least need not share their views or their fears. Our feet are set, not on the shifting sands of the opinions and of the fancies of the day, but on a solid foundation of verified truth, which by the labors of each succeeding age is made broader and more firm. To us the past is a thing to look back upon, not with regret, not as something which has been lost never to be regained, but with content, as something whose influence is with us still, helping us on our further way. With us, indeed, the past points not to itself, but to the future; the golden age is in front of us, not behind us; that which we do know is a lamp whose brightest beams are shed into the unknown before us, showing us how much there is in front and lighting up the way to reach it. We are confident in the advance because, as each one of us feels that any step forward which he may make is not ordered by himself alone and is not the result of his own sole efforts in the present, but is, and that in large measure, the outcome of the labors of others in the past, so each one of us has the sure and certain hope that as the past has helped him, so his efforts, be they great or be they small, will be a help to those to come.

MICHAEL FOSTER

UNIVERSITY OF CAMBRIDGE

II

CHANGES IN THE TEACHING OF LATIN IN GERMANY [1]

Among the changes that have been made in gymnasial instruction, which in most of the German states were inaugurated by a new program in the beginning of 1890, the most welcome is the final setting aside of that antiquated educational goal—Latin composition. For centuries the ability to write Latin correctly and, if might be, elegantly, was the chief and almost only end of all the instruction. This was natural and necessary so long as Latin was the language of science and of the higher culture. But after the use of the modern tongues became general in literature and in science—which for Germany has been the case only since the beginning of the latter half of the eighteenth century—the need of writing Latin had passed away. Nevertheless, under the ruling influence of the intellectual trend of the new humanism, the schools went on in the track of old habit. They still made Latin composition the most important of their disciplines, the Prussian schools, especially, demanding the *specimina* of Latin eloquence as the essential test of scholarship. This might last so long as the teachers of the gymnasiums were new humanist philologers, and the students, for the most part, were themselves to be theologians, jurists, or philologers. It began to grow intolerable when, on the one hand, the linguists losing their ascendency in the school, facility in writing Latin became increasingly rare; and, on the other hand, a growing number of students were looking forward to professional or scientific careers as physicians, technologists, officers, and the like. Since 1870 the complaints of teachers and of scholars, and with them, of parents also, under this yoke of Latin drill were heard more and more frequently. The rigid gymnasial ortho-

[1] Translated from *Pädagogisches Archiv*, by Frederic L. Luqueer, Principal of P. S. No. 22, Brooklyn, N. Y.

doxy alone was deaf to them; or, rather, it knew how to persuade the school authorities to stand as a breakwater against these demands of the time. It is the same short-sighted wisdom that is so familiar to Germans in affairs of church and of state: contempt of popular opinion, or of the *Zeitgeist*, is the beginning of this wisdom. True, it is not wisdom altogether to surrender one's self to it; but still less is it wisdom openly to condemn it. To be in advance of the time to feel what is coming—this is what a people truly needs of its government, as Goethe says:

> "Worauf alles ankommt, das ist sehr simpel;
> Vater verfuge, eh's das Gesind spürt.
> Da und dorthin flattert ein Wimpel,
> Steuermann weiss, wohin euch der Wind führt."

But for our government of schools many will find, I fear, these other verses of Goethe more applicable:

> "Über ein Ding wird viel geplaudert,
> Viel beraten und lange gezaudert:
> Und endlich giebt ein böses Muss
> Der Sache widrig den Beschluss."

The hard necessity—the *böse Muss*—came in the year 1890. The glory of Latin faded out over night; its praises were silent.

What place, then, and what order, is instruction in Latin to have? That is the next question. A timely and thoughtful answer is given by a recent work of P. Dettweiler, director of the gymnasium in Bensheim, Hesse.[2] Many will doubtless be interested in the things treated by this book; they touch a wider circle than that of teachers and students. I shall try to indicate in outline the changes that have taken place.

First a general remark as to the position of the author in respect to the reform of 1891. Dettweiler introduces himself as a disciple and co-worker of H. Schiller of Giessen. At the outset he takes open stand upon the new ground. He is no friend of sick-minded pessimism, and sees in the passive antipathy that here and there still opposes the new, a danger far

[2] *Handbuch der Erziehungs- und Unterrichtslehre für höhere Schulen*, herausgegeben von A. Baumeister. III Vol.: *Didaktik und Methodik einzelner Lehrfächer*. I Pt. *Lateinisch*, by P. Dettweiler. München: Becksche Buchhandlung, 1895.

more threatening to the humanistic gymnasium than that offered by the modern spirit or by the favor or disfavor of prominent men. He quotes an English authority, "a good patriot and true statesman always seeks to make the best of the material at hand"; which wisdom, moreover, Aristotle long ago expressed: out of the given make the best.

I cannot, without modification, hold the new plan of studies to be "final and adequate." Courses of study are apt to be too short-lived for us to think of any as final; they, like all laws in the new German Empire, appear subject to decay. I do not believe that the "unity school" of Frick and Schiller, which follows the Prussian order of instruction of 1891, is the final form of our higher schools. I am rather convinced that, better than the unity school which teaches everything, are the two co-ordinate schools, one of which carries on the classic-humanistic studies with greater force and freedom than can the unity school, while the other, by the omission of Greek, gains time for an intensive study of the modern languages and sciences. Nor would Dettweiler, I think, oppose such a scheme. He would gladly make more room in the gymnasium for the classics. A course of instruction, to please him, must lead to free, yet lasting, intimacy with the ancient world. There should be speaking acquaintance with grammar and composition, but no exhaustive study of linguistic details.

The work of Dettweiler, to continue with this, is in two parts: a brief general view, in which the notion underlying the aim and method of Latin instruction is developed; and a comprehensive and detailed treatment, in which are described as fully as could be desired, the course of instruction at its several stages, in the two lower, the three intermediate, and finally the four upper classes. The actual course pursued at the gymnasium in Giessen forms the basis of description. We are not bidden: thus must ye do; but are told thus we have done, and so it is—a very happy form for a book on education. I shall now compare some of the main points of the old system with those described in the work under consideration.

As to the aim, the essential difference is that the old system,

as it ruled in Prussia until 1891, of course with many amendments and modifications, made the writing of Latin the chief end of all instruction. Grammar and composition were its direct means; reading, only the indirect. In the new system, the reading of Latin is the goal, and everything else is subordinate. The essential fruit that is expected from the instruction is historical culture, the ability to understand the present and its relations thru a knowledge of its beginnings and development, more thoroly than can he who has not heard antiquity speak with its own tongue. Those who strive for this also gain, unwittingly, what formerly was the boasted outcome of the Latin discipline, namely, that formal culture which comes from continuous exercise in the comprehension, construction, and expression of linguistic forms of the thoughts and of the facts of the past: ability to see, to judge, and to speak, the *sapere et fari*.

As regards method, the break with the old system, in the form it had taken in the first half of this century, is complete. I may state the difference as follows, tho it must be remembered that in actual practice the two systems often correspond in many particulars. In essence, the old system was based upon the home work of the pupil. The teacher set a task. It was learned or worked over at home. At the next lesson the teacher conducted a recitation, giving needed help or criticism. The new system, in its essentials, is based upon the common efforts of the pupils in class. The lesson-hours are not for the setting of tasks and their recitation; but for teaching and class-study. The instructor is to teach the pupil to see, to find, to work. In the three divisions of language study—grammar, reading, writing—there is the same difference.

To begin with reading. The ruling method, so familiar to those who are older, was that of home preparation. A portion of the author that was being read was daily set the pupil to study at home. By the aid of dictionaries, grammars, and annotated editions he was so to work over the passage as to be able to account for the words and for the grammatical points involved, and to give a tolerable translation. In class, one and another were called upon; the teacher helped them out,

gave the needed explanations, and, finally, a model version. This method, after supplanting the older system of exposition and repetition,—the teacher first translating the text and the pupil repeating the translation,—became general only at the time of the new humanistic movement. It was claimed that it, more than any other method, had the merit of awakening the pupil from a passive state, and of developing, even in his reading of the author, his self-activity; opportunity for which was before offered only by composition. In this is seen a beginning of the trend from writing to reading.

Without doubt this method, in practice, came far short of its claims, however well it might have worked under ideal conditions. Little by little, harmful side-effects appeared, which threatened to make the system miscarry altogether. The chief of these were as follows. The preparation system overburdened industrious and conscientious students, while it tempted the light-minded into various underhand ways. The former thumbed for hours grammar and dictionary, and worried perhaps over the obscure enlightenment of the notes in annotated editions—all often without satisfying result. The less studious, on the other hand, soon learned to avail themselves of the various means abundantly furnished by booksellers in answer to the new demand. They used translations, or "ponies," or simply copied from their neighbors. The preparation system presupposes small classes that are in easy control, and the supremacy of classical study in the school. With large classes, and with lessons in all possible subjects, it grew intolerable. Recitation hours were strained testing-times of the preparation. The relations between teacher and pupil were poisoned by deception and distrust. The useless racking of unprepared or incapable pupils was a vexation to the better students and of no avail to the others. The tone of the lecture room was but too often a mingling of anxiety and listlessness.

To avoid these evils the new system makes the lesson hour essentially the time for preparation. In common effort, the class under the lead of the teacher seek to master the words and ideas of the text. Dettweiler thus describes the process. A passage, of sufficient unity of thought, is taken for the hour.

The teacher in a few words first indicates the contents. Then he explains unfamiliar words, references, and other difficulties of the text. Allowing a short time for looking thru the first paragraph, he then calls upon one to translate; if there is hesitation, quick aid is sought from another. When the entire passage has thus been gone thru, it is summarized either in German or in Latin, so that the pupil may underscore in his book the leading words. Finally, the teacher himself gives a good translation. At the beginning of the next hour there is a brief review, and perhaps the text is read by a pupil. The customary reading the text aloud by the pupil before it is understood is given up as useless. The teacher, however, may first read the passage aloud: a proper reading being a half-explanation. When a selection of fair length, or a short work, has been studied thru in this way, its contents are reviewed, and the gain in literary or in historical knowledge made sure. The use of good German is insisted upon from beginning to end; the jargon of school translation is tabooed. Short written exercises supplement the oral exercise, and brief notes on the literary or historical points of the text read are written in German, either in class or at home. Dettweiler presents a full series of these short studies as they were carried out by pupils of all grades in the school. Now and again a written translation in German is required—of course after the class study has been had,—as a useful exercise of attention and of memory. Finally, it is recommended that note-books be kept, in which the linguistic and historical information gained may be put in systematic order. This needs the direction of the teacher. In the upper classes, the notes thus arranged furnish material for short essays on the subject covered by the reading. Dettweiler states that experience has convinced him that pupils learn to read by this method in less time than by the old. In fact, unless under the most favorable conditions, the preparation system had but little good result. By it the idle pupils strengthened that very habit of inactivity which the system was designed to correct. The pupil relied upon it without energetic work on his own; while the teacher, on his part, formed the habit of constantly interrupting the recitation of

the pupil in trying to set him right. There was no confidence that the language could be acquired; and many passed from the school with the feeling of being unable even to read an author. In the new method, the emulation stirred by common effort enlivens the hour; the extemporaneous work, it is hoped, will escape the temptation to underhand means of preparation; and the habit of reading at sight encourages further reading. It is true that with crowded classes, unwilling pupils, and burdened teachers, this new method will work no wonders. But we are to have a further reckoning with all these. The new way demands more of pupil and of teacher; especially of the latter, as Dettweiler emphasizes repeatedly. He must have great accuracy and quickness of didactic insight, and power to call forth and to lead his pupil's mind; otherwise the lessons will drag. Dettweiler does not count much upon private reading; there is no time for it. And in this, as things are, perhaps he is right.

A word may be added concerning the choice of authors. Formerly reference was had chiefly to the language; that is, to its availability, in words or turns of expression, for Latin composition; and Cicero was the favorite. Now, regard must be had to the content, and to the literary worth. The historians are given more attention, and in this Dettweiler is at one with the Prussian course of study. Cæsar, Livy, and Tacitus have first place, with a view of making real to the pupil the Roman life, the Roman *virtus;* and also, particularly, that in them he may trace the origins of modern Europe. Afterward, Cicero, Vergil, and Horace make known the culture of the time of the Empire, of which the world we live in is the inheritor. Of Cicero he would use, not, as would the Prussian program, the orations and letters alone, but also the philosophical writings, especially the *De officiis.* These give a much clearer insight into the intellectual and spiritual world of antiquity than do the orations.

The importance is urged of the class reading something that is a whole, not an extract cut short arbitrarily by the close of hour or of term. Generally it is best to take a somewhat long work, as the *Æneid,* the *Gallic war,* or Livy, reading on the suc-

cessive days passages each of which has unity of content. At the end, the pupil must feel that he has obtained a connected view of events or of ideas. Regard for the sense demands that authors be not read two or three at a time, but that one be finished first. The comprehension is to be aided in every way—by pictorial illustration, by representations of utensils and buildings, by maps, and reproductions of art work. All these might be neglected so long as the acquirement of the language was the main thing, tho such neglect worked harm. For the natural interest in reading is directed to the thought; and if this be not met, all pleasure in reading dies—an effect that Leibniz had already noted. Schools, he once said bitterly, are places where one learns to hate books.

There are decided changes also in both the other divisions of instruction. The old grammatical instruction set paragraphs in a text-book, which the pupils had to learn at home and recite upon: paradigms, rules, and so on. Here also the new method is based upon self-activity in united class work. The teacher, as far as possible, has the class itself discover in the examples the forms and rules, and describe them. He can, as is shown, have the pupil look for and tell the case-endings in simple words or in short sentences. The blackboard is constantly used. What grows before the eyes of the pupil, fixes itself more easily and firmly than a rigid and complete paradigm. In the same way the pupil has from the teacher the syntactical forms. Everywhere it is sought to connect the new with the old. Forms of the German itself are explained to the pupil; and thus from the beginning he sees what is like or unlike the foreign idiom. He is shown by examples how he can pass from the German constructions to the at first strange but equivalent syntactical forms of the Latin, to the accusative with the infinitive, or to the ablative absolute, and the like. Grammatical information is limited to the most essential; for if one attempts systematic completeness too early, his use of the language is apt to be "more Roman than Rome," because of the arbitrary and over-nice application of the rules —a thing which leads to such fearful "waste of innocent red ink." But here the object of the grammatical teaching is to

give a good understanding only of the forms met with in the reading.

Finally, less time is spent in Latin composition, and the method has been changed. Its one purpose is to give surer acquaintance with the linguistic forms, and so to aid the reading. The old method, everywhere in use about the middle of the century, was this: A selection from the exercise-book was given, and the pupil set himself at home to translate this as best he could, aided by grammar and dictionary. The teacher took the production to his home, corrected it, counted the mistakes, and at the next lesson remarked upon this or that characteristic of the pupil's work. Here, again, the new method substitutes class work for work at home. In the lower grades much is translated orally, short sentences are formed or those of the selection varied, and the blackboard is in constant use. In the intermediate grades the pupils give short oral summaries of what has been read. Then the teacher puts together a German text based upon what has once been read, and the class translates it. He first calls attention to difficulties, either perhaps by merely pointing them out, or removing them before the writing begins; for instance, by suiting the German expression to the Latin idiom. The pupil is to hear and to write as little as possible of the faulty, least of all to rewrite mistakes. At intervals a written exercise is set for home work, as a test of the scholar's knowledge and ability. In the upper classes translation into Latin may be omitted altogether. In its stead short papers may be written in German on the points of language or of style noticed in reading the author.

These are, in a general way, the differences between the old method of teaching Latin and the new. Of course the new was not discovered as a whole yesterday or to-day. Much of it has long been the practice of many schools. But I am perhaps right in saying that here the new method has first been formed into a unity, with all details thought out and made to work in harmony. Educational theory and school experience have joined in producing it.

I have read Dettweiler's book with great interest from beginning to end, and have been taught much by it. I am sure

that it will be of service to all who in this department of instruction wish to know the possible and real. Its great merit is its presentation of the actual and concrete. Swelling words and generalities are absent. Nor is there the usual cloud of literary witnesses. Only a modest reference is made to what the author has read with profit. Interest in the thing itself rules both the author and his work. It is true that many who are themselves experienced will disagree with this or that, and rightly. A method depends not alone upon the conditions of the case, but also upon the personality of the teacher. That there is not, nor can be, any fixed, authoritative method is the chief truth of the entire book. This is implied in its very form, which is descriptive, not imperative. But it is just this that gives it its welcome and its worth. I believe no teacher will lightly lay the book aside, without having been moved to think and to compare, and perhaps to try and test himself therewith. Naturally young teachers most of all, who are still seeking a method suited to themselves and to their work, will be grateful readers of such a book; tho they must not forget the grain of salt without which even the best method becomes pedantry.

I myself have no doubt but that things will take the general course mapped out here. And I believe that this kind of classical instruction will win again the sympathy of the cultured, which was lost when it was attempted to galvanize the old Latin drill. At any rate the age of Goethe will not return; nor do I regret it. Our goal is before us, not behind us.

I would touch but one other point. Dettweiler speaks with general approval of Prussia's new program of instruction; and naturally, for, upon the whole, it agrees with his views. But for one feature of the new order he has no liking—that is for the so-called "final examinations." He is glad that all of South Germany has abolished them. In fact the new order of instruction could hardly have done anything worse than the prescribing of this new state examination. It and its necessary effects are in such complete opposition to the professed educational character of the new order as a whole, that its presence would be inexplicable, were it not that there are

other traces also which indicate that the new plan of 1891 is rather a mechanical aggregate than an organic growth. The final examination, illogically enough, calls for a written translation into Latin and Greek. The plan of instruction speaks much of the inductive method; the final examination would go back to answers in stereotyped formulas. The plan sets itself against verbal memorizing, against drilling and the sounding of cymbals; while the final examination would perfect these as never before. Formerly, in the upper third class and lower second, connected study of the authors was begun; now, the examination compels the teachers, for their own sake and their pupils', to train them more strenuously than ever *ad hoc*. Dettweiler expresses the hope that the minister of public instruction will become more liberal. We may indeed wish and hope so. But even a minister, tho personally a man of insight and judgment and of benevolence, cannot prevent the system from having its natural results. In an examination before the state official, and most of all in an examination of so many pupils at a time, as would be the rule, the things that count are faultless composition and ready answers. The general knowledge and ability of the pupil are not tested here,—these count perhaps with the teacher who has known him long,—but the correctness of his extemporaneous work, and his confidence and ease in answering every sort of question. No time is given for unfolding the question, nor for thought; the less reflection apparent, the completer the knowledge. This is what the examination calls for and what it will bring about. Whether those examined have read their authors with interest or not, whether they have thought over, as their maturity would make possible, the content and form, is of little moment in the examination; composition without mistakes, and "ready wit," are happy things for the examined. Drill will further these, altho it helps the intellectual growth but little. Out of pure benevolence to pupil and parent, the teacher will fall in with the demand. And even if written translations into German were substituted for extemporizing in Latin and Greek, the result would be the same. The drill would be directed to this end. Dettweiler argues otherwise. This would happen, he thinks,

only with teachers who make everything mechanical. But I believe that it would result wherever the influence of the official examination is felt. The effect of every examination that ceases to be an affair of intimacy between teacher and pupil is this: the attention of the teacher and of the taught is turned aside from the subject itself to the passing of the test; and to pass a test, which tries the school acquirements of masses of pupils, will always be easiest to those who have been fittingly drilled. That men thereby suffer inner despite and loss does not trouble the examination paper a whit. Paper has no heart. Nay, it even has the power to destroy the heart of those who live with it too long. We know what Bismarck in anger once said of the general privy council. And what is to be said, when the new program both increases the demand upon the intense activity of the teacher, and also puts upon him more hours of duty, the former maximum now being made the average? And when, at the very time that every official speech expressed concern for unemployed candidates for school positions, the program, by calling for a less number of hours in the aggregate, lessened the number of these positions? And when the overcrowding of classes—a condition that is the most prolific cause of every school evil—exists now as before? In these lies the need of reform; not in increased severity of examination or of control. One may well marvel that the protests of teachers and parents are not more frequent. But the school authorities are deceived, if they think the silence a sign of satisfaction with their doings. I fear lest it is rather a sign of lassitude and despair. There is no help for it, and so it must be borne.

FRIEDRICH PAULSEN

UNIVERSITY OF BERLIN

III

SOCIAL RECAPITULATION

The law which this paper wishes to demonstrate is the law that with progressive civilization ancestral adult experiences tend to be perpetuated and socialized in games and plays, or that the child tends to recapitulate socially the history of his race.

Among so-called child-study men there is a manifest endeavor to treat the experiences of the child too exclusively as organic inheritances from early animal and savage life. Nearly all animal and savage characteristics are spoken of as if inherited organically. Too little attention is paid to the influence of the social heritage of the race. There is undoubtedly a social heredity as well as an organic heredity. Organic heredity may be taken to mean, roughly speaking, the transmission of the congenital characteristics of parents to their descendants. Social heredity, on the contrary, may be taken to mean transmission from parents to the children of the improved environment where the improved environment means the accumulation of oral and written tradition and knowledge, social institutions, the extensions and adaptations of our sense and motor organs as seen in tools and instruments. Examples of what a child might be without the influence of the improved social environment, may be studied in the cases reported to us of wild and feral men. Take, for instance, the case, reported by Cornish in his *Plays of wild animals,* of the child exposed in early infancy and brought up by wild animals. When discovered the child acted like the animals among which he was brought up. He ran on all-fours, ate and drank like a wolf, emitted growls and barks like an animal, tore the clothes and flesh of the village children, and behaved, in short, like a wild animal. Little or no traces of a recapitulation of his human ancestry were in evidence.

An environment, consisting of the proper social stimuli,

seems necessary to educate or elicit the latent, inherited, human-savage traits and characteristics. An illustration of this is seen in the premature development of the slum-children in our large cities. Absence of imagination-stimuli, such as myths, legends, tales, nursery rhymes, poetry, etc., causes a too-ready transition to the stage of adult experiences, resulting in a lack of the necessary sub-structure for the complete, all-around development necessitated by the exacting demands of a highly evolved society. Thus the child inherits latent, human, ancestral traits which need only the proper social stimuli for their completer evolution and development. Inasmuch as the savage mind and the child mind, and in a lesser degree, the uneducated mind, possess organically a similar nature, similar social stimuli are necessary for their development. Thus we have the child reacting in a manner similar to that of the savage—repeating the same activities in the same earnest, objective way, but yet in a shortened, abbreviated, and fanciful manner, as in games and plays. Without going thru these stages, the child suffers prematurely physical, mental, and moral ossification.

Many of the games and plays described by Karl Gross in his recent works on play as instinctive activities are only partially organic reactions. The social stimuli necessary for these organic reactions are supplied by social tradition, oral or written. Without the social stimuli the instinctive reactions lie dormant. This social inheritance of the child was originally, in at least the majority of cases, the serious adult ancestral experiences and activities of our far remote ancestors. In this way, the child is recapitulating socially the history of its race. This accounts for the serious objective, business-like way in which we play.

A few examples, tho probably well known, may illustrate the wide application and prevalence of this law of social recapitulation:

There is a certain game played by English boys and girls the origin of which may be traced back to the early form of marriage by capture. Our marriage ceremony, all-necessary as it is to preserve our social institutions and a high morality, is

oftentimes but a merry festival. The "best man" in the village was once needed to effect the capture of a bride, who was one of the most useful and valuable chattels a father possessed. The throwing of rice at a wedding was originally throwing of all sorts of missles by the enraged relatives of the bride at the successful bridegroom as he carried off his prize.

Grimm informs us that divinities form the core of many of our games and pastimes. The goddess Ostara, or Eástre (Easter), is preserved to us in the name of our Easter festival. Our festivals and games at Easter are probably in their origin rites pertaining to the goddess Ostara. Christianity was wise in grafting on the newer doctrines to the well-established heathen customs and practices. These Easter games came down from dark and remote ages. Easter eggs and the Easter tale, which preachers told from the pulpit for the people's amusement, are old heathen rites.[1] So with the heathen Yule festivities and many others.

Fairy tales, with their frequent metamorphoses, may be traced back to god-myths, and even to the earlier stage of the animal-epos. In the myths of primitive America the methods of primitive thought are perhaps better illustrated than in the myths of other countries. Curtin[2] divides the myths of primitive America into two groups, creation myths and action myths. According to the first class there existed at first a world of primitive people or gods, who were different from us entirely. These people were almost innumerable, dwelling together in perfect harmony for an indefinite length of time. The minds of these people, with but a few exceptions, changed, however. Discord broke out, one wanting one thing and another another thing. Conflict set in and the consequence was that in the struggle some were changed into plants, some into animals, others into minerals, and so on. Thus arose the world as you see it now. Creation by metamorphoses seemed a reasonable way to account for the origin of things. After this cycle of myths come the myths which attempt to describe the present world as it now exists with all its happenings. These

[1] Grimm, *German mythology*

[2] Curtin, *Creation myths of primitive America*, p. xx

are the action myths. They describe the conflicts and struggles ensuing upon the creative metamorphoses. Light and darkness, heat and cold, and heroes of all description struggle for the mastery. The value of these myths is that by their means we gain an insight into primitive modes of thought and action. The lives of the first people are described in creation myths and presented as models (early education) upon which faithful Indians fashion their lives at all times and places. The lineal descendants of these and other myths often serve suitably as mental food and appropriate social stimuli for the pupils of to-day.

In the tale of Dornröschen (Thorn-rose or Sleeping Beauty) we have the modern representative of the story of Brünhilde, one of the Walküre, or guardian spirits. Just as Dornröschen goes to sleep from the prick of a spindle in the nursery tale, so Brünhilde goes to sleep from the prick of the svefn-thorn or sleep-thorn. Spindles are an essential characteristic of all the wise women of antiquity among Teutons, Celts, and Greeks.[3] So in the story of *Jack the Giant-killer* the hero was originally, I believe, no less than Thor, god of our ancestors.

Local gods also tend to become local saints and sometimes the favorite by-words of merry banqueters and toast-drinkers. They become patron gods and then symbols of the country and its greatness; as, for example, St. George of England. Children still ascribe to their gods exclusive, tribal notions. He is their peculiar God and they are his peculiar chosen people. When Christianity came into contact with the early religion of the Teutons many of the Teuton gods and goddesses were transformed into demons or devils and their priestesses into witches who possessed great power with these outcast devils.[4] The wise women of the tribes became outcasts living in caves and in the fields. They were surrounded by the domestic animals they had reclaimed from a savage state and by the domestic instruments and tools which they had probably invented, such as the goat and the cat, the broom and the

[3] Grimm, op. cit., vol. i. p. 419

[4] Karl Pearson, *The chances of death*, "Woman as witch"; Grimm, *German mythology*, vol. iii. p. 986; Otis T. Mason, *Woman's share in primitive culture*.

fork. The greater the ignorance of the people the greater the superstition and the more power ascribed to the demons and witches. Even to-day the "orphant Annie" tells the children: "An' the gobble-uns 'll git you ef you don't watch out!"

Numberless stories and legends, from the period of the Middle Ages and earlier, show the extent to which demons filled the consciousness of the age. The devil was almost the *Zeitgeist* of the times. God was a judge and ruler and nigh akin to popular notions of the devil prevalent among the ignorant to-day. Anselm's doctrine of the vicarious atonement owes its origin and prevalence to the belief in the devil's semi-divine power and lawyer-like and business-like method of carrying on his work. The *Dies Iræ* represents a celestial Roman court of law in full function. The child-mind seems to possess an appetite for a similar mental pabulum. Many children grasp after such details with a curious avidity. Hobgoblins and demons are natural enough to them. The forces at work in nature are to them, as to the savages and uneducated of all ages, persons like unto themselves, animated with yearnings and strivings, and torn with the passions and impulses of an ill-regulated life. These hobgoblins and demons are, after all, to the child-mind somewhat theatrical in their nature. Like games they are serious objective experiences, but, nevertheless, considered to be more or less unreal. There is more or less a pleasure-pain element connected with these fears and scares, showing the increasing play element in these experiences.[5] The game of hide-and-seek illustrates my meaning.

Another strong instance of this doctrine of social recapitulation is that of the rite of the blood-covenant. It was once undoubtedly a strong social bulwark. Each participant drank of the blood of the other. Incisions were usually made in the arms, the blood was caught, and an eternal compact was completed by each drinking the other's blood. The relationship established was one supposed to be more lasting and closer than

[5] Conway, *Demonology and devil-lore*; G. S. Hall, *American journal of psychology*, "Fears."

that of brotherhood. Gradually, however, wine was substituted for the blood. To-day we drink each other's health as a mere pleasing, after-dinner pastime, forgetful of the life-and-death earnestness of the times in which the custom arose.[6] The ancestral adult experience has become a play or game.

The arts of singing and dancing are certainly very ancient. Leaving out of view the fact that they were often the expressions of deep erotic tendencies, and possibly irradiations of an erotic life, it may be said that singing and dancing were the schools of savage life. By these actions adolescents were initiated into the mysteries of the tribe, were taught the famous deeds of their Herculean and Machiavellian ancestors, and introduced to the forms of savage polity—political, religious, and social. The ardor and fierce courage of their ancestors were *dramatized* into their souls. They certainly learned by doing. Higgins[7] says that "Dancing was originally merely religious, intended to assist the memory in retaining the sacred learning which originated previous to the invention of letters. Indeed, I believe that there were no parts of the rites and ceremonies of antiquity which were not adopted with a view to keep in recollection the ancient learning before letters were known." "In the religious rites of a people I should expect to find the earliest of their habits and customs." Hence, according to Bourke, the Zuñi dance may be interpreted as a dramatic pictograph of some half-forgotten episode in tribal history. As superstitions are often but fossilized relics (*Ueberbleibsal, Aber-glaube,* superfluous belief) of earlier religious forms, so many songs and dances, charms and rites are abbreviated, socialized remains of ancestral adult political and religious practices. Forms of politeness and courtesy are also to be reckoned in this class, being often survivals of an early *courtly* life.[8]

Many illustrations of this law of social recapitulation may be found in the philological derivation of many words and phrases used metaphorically to-day. To take an instance:

[6] Trumbull, *The blood covenant*

[7] Quoted by Bourke, *Scatalogic rites*, p. 26

[8] Herbert Spencer, *Illustrations of universal progress*, "Manners and fashions."

" The yoke of matrimony " possessed a slightly different meaning at the time of its origin from that which it has come to possess. In primitive agriculture man was his own beast of burden. Horses were in all probability used at first for purposes of food. They were only gradually utilized as beasts of burden.[9] Men and women, not cattle, drew the plow. Hence the expression *con-jux,* yoke-fellow, or wife. Hence *con-jugium,* sharing the yoke, *i. e.,* marriage. The yoke is to be taken in a quite literal sense. A reminiscence of the common yoke of primitive times is preserved in the Roman marriage customs. After the nuptials the wife installs herself in the husband's house with this formula: *ubi tu Gaius, ego ibi Gaia, i. e.,* " Where thou plowest, I plow with thee." According to the Greek lexicographers *γαῖος* means *βοῦς ἐργαστής,* the ox. Tacitus (*Germania,* chap. xviii) mentions *juncti boves* as a symbol that the wife is *laborum socia.* The German phrase, *Was treibst du?* in a similar manner goes back to the pastoral life of primitive times.[10] So also the word *pecunia,* money, from *pecus,* cattle, and others.

Darwin [11] believes that man's musical capacity has not been developed from the tones used in impassioned speech, but that it is developed at an earlier stage, when the animals of the lower series possessed the instinctive power of producing musical notes and rhythms. We must, therefore, suppose that the rhythms and cadences of oratory are derived from previously developed musical powers. We can thus understand how it is that music, dancing, song, and poetry are such very ancient arts.[12] After applying the principles of sexual selection to this particular phase of the subject Darwin affirms that " The impassioned orator, bard, or musician, when with his varied tones and cadences he excites the strongest emotions in his hearers, little suspects that he uses the same means by which his half-human ancestors long ago aroused each other's ardent passions, during their courtship and rivalry." It is a well-known fact that poets and orators in their loftiest moods revert to language

[9] Taylor, *The origin of the Aryans*
[10] Ihering, *Evolution of the Aryan,* p. 391, 392
[11] Darwin, *Descent of man,* p. 572
[12] *Ib.* p. 573

and modes of thought and expression which have no meaning apart from a primitive, animistic mode of viewing the world.

Poetry is said by Darwin [13] to be the offspring of song. This seems to be no truer than the statements found in a large number of books on rhetoric to the effect that prose is the proper speech of man and that poetry is artificial. They also assert that poetry is a late product, that prose came naturally first in the development of the race. The reverse of these statements is nearer the truth of the matter. The denial may be based on historical anthropology and on psychology. A close study of the anthropomorphic nature of man, so necessary in poetry, will show that anthropomorphism is a tendency referring not to the realm of the gods alone, but embracing the whole world of human thought and feeling. It is the fundamental nature of the human mind. It has no other method of working than by reading into the world about it, its own ideas, feelings, and willings. Its chief method or instrument is that of association of ideas. In the progress of human thought, therefore, we may expect anthropomorphism at its crudest in the beginning and that scientific prose is its latest development. And since anthropomorphism is of the very nature of the human mind so poetry seems, especially in the beginning, the natural speech of man and prose a highly artificial and lately evolved product.[14] Poetry is, therefore, another illustration of the law of social recapitulation. A prosaic, matter-of-fact early education deprives the child of that elastic spring of the imagination so necessary in every walk of life. The child needs the social stimuli of its early adult ancestors.

When we are led to investigate the first foundation of many of our games and popular customs we are forced to admit that, however widely they may have deviated from their original design and meaning, they are derived from some religious tenets, observances, or ceremonies. Like other things in nature these early rites and customs have been subject to the rigid scrutiny of the law of natural selection, and, consequently, we must say that if they have survived, and that, too, almost

[13] Darwin, *Descent of man*, p. 565

[14] Biese, *Philosophie des metaphorischen*, (1893)

universally, they must have been useful adaptations to their respective environments. The environment has, however, to some extent, changed, and yet not in all particulars. Instead of an environment of adults most seriously occupied in the struggle for a bare existence, the environment has changed to that of children and adults in their moods of play and relaxation. To the savage there is an imperative need in his social life of supplying the comparative absence of laws and legal sanctions by other laws and sanctions in which gods and spirits, good and bad, act as constables, rulers, and administrators. As someone has said, religion was to him a life and fire insurance company. It was, however, much more. It was to him a profound system of society in which he lived, and without which early society would probably have foundered in the chaotic Walpurgis-night of unregulated desires and impulses. It is so with the uneducated to-day, to a large extent. These rites, customs, beliefs of adult, ancestral experiences, in the very modified form of plays, games, myths, and tales, fulfill a function in the social life and world of the child of to-day. The child and the savage appear to possess similar potentialities and tendencies, and hence the same or similar social stimuli are suitable and useful in both cases.

ARTHUR ALLIN

UNIVERSITY OF COLORADO,
BOULDER, COLO.

IV

A FRESHMAN AT NINETEEN

The average age of the Harvard Freshman is almost nineteen, of the Harvard Senior, at graduation, about twenty-three. Statistics procurable from other institutions do not diminish these averages. The Yale Freshman, as one would expect, is of about the same age as his Harvard brother; the Princeton Freshman perhaps a trifle younger; while the Ann Arbor Freshman, perhaps the fairest representative of the Western college, averages nineteen and a half. Assuming the closest possible connections, the average Harvard man will leave the law school at twenty-six; the medical school at twenty-seven. It would be safe to say, therefore, that few men, enjoying our best academic and professional training, are self-supporting before twenty-eight. Such a condition practically prohibits thorogoing preparation for a professional career. Despite the efforts now making on the part of the medical schools to raise their standard by lengthening the course of study to four years, the medical student will continue to be a crude and untrained youth, unfit to pursue in really scientific fashion the studies now recognized as indispensable to a thoro knowledge of medicine, as long as the continued existence of our present elementary- and secondary-school system makes it almost impossible for anyone to complete a fair collegiate education until he has passed the first years of manhood.

After a far more thoro and solid course of training than our own, the young German lawyer finds himself, at twenty-three, the young German doctor at twenty-four, at the threshold of practical life. Granting that in point of quality there is no choice between the two products, the German boy has actually saved the entire period which the American spends at college. But, as a matter of fact, no one maintains that there is no difference in quality; so that the advantage lies with the foreigner, even more strongly than the figures alone indicate.

Many suggestions have been made toward remedying this deplorable condition of things: lowering of matriculation requirements, abolition of the present Senior year, and the overlapping of professional and collegiate courses. These suggestions practically admit that the American boy, despite his alleged superiority to the foreign boy in quickness and inventiveness, is inferior to him in actual intellectual capacity. We are in possession of no data by which such a question can be determined. I, for one, do not believe that as yet the American boy has had an even chance. My experience has, in fact, led me to precisely the opposite conclusion; namely, that retaining the present matriculation requirements of the best American colleges, the American boy whose training has been efficiently conducted can enter college at seventeen, and that in some respects these requirements may be decidedly extended without raising the age limit. If now by improving the quality of elementary and secondary training, the Freshman average can be reduced to seventeen, at the same time that the college itself is enabled, by the increased efficiency of preparatory work, to reduce its required course to three years, the possession of a college education can begin to be insisted on as an indispensable requisite to the highest professional training; until that is brought about, we occupy the peculiar attitude of providing higher education which most men engaged in professional pursuits must do without, because they have not time for it. College education, instead of being an indispensable stage in professional education, continues to be, what it now largely is, a semi-ornamental addition thereto. The trouble, to my thinking, lies mainly neither in the colleges nor in the boys, but in the long stretch of years in which, from the elementary school thru the high or preparatory school, the child's energies are frittered away on verbal technicalities, while the rigid grasp of the class system puts a premium on uncomplaining submission to routine. A brief analysis will show the inadequacy of this system as a basis for higher education and may also suggest the nature of the remedy.

The graded school dates back to a time when the demand for educational extension was very strong, the demand for

educational intension very weak; when it was considered immeasurably important that all should understand the three R's, and when anything more than this was an exception which might be left to provide for itself. Despite the fact that what was the exception tends now to become the rule, the general framework of the system remains unaltered; criticism expends itself for the most part on the curriculum. The school consists essentially of rigidly articulated classes, forming a sort of human staircase. A regular curriculum is marked out to be completed by all, within a predetermined period, at the close of which the entire lump, leavened or unleavened, is handed bodily to another teacher, to whom the children are entirely strange, and with whom they remain for a similar term, the work of which has been prearranged in the same ironclad fashion. The class carries those that have done well and those that have just succeeded in keeping afloat, and identical tasks are imposed upon all pupils, of all varieties of capacity and industry. Large classes, a fixed schedule, annual change of teachers—these are the earmarks of the graded school. Is it possible that energetic development of capacity, wise nurture of doubtful power, economical employment of the individual child's time and nervous force, can be secured under these conditions? Advocates of the system do not defend it on its merits; they seek cover under pretense of its inevitability. Perhaps it is true that with the existing resources in the way of money and teachers, no other plan is immediately feasible; but private schools and endowed academies may at least cease to conform to the public-school model and may experimentally seek to determine whether a more elastic and economic system is not practicable. If found, such a method would certainly in time prove the solvent force to break up the inflexibly rigid public school; assuredly we have not yet reached the limit of State expenditure in primary and secondary education.

The graded school contemplates an imaginary average child that does not exist. His nearest living relative belongs to the "least fit." It cannot use, hence it cannot effectively encourage unusual energy, brilliancy, originality. Its ideal is the patient, faithful, commonplace boy, and a child of uncommon

vivacity, physical or intellectual, is like sand in its joints. At the close of its slow, unillumined march, the American boy knocks at nineteen or later for admission at college doors, with his little Latin and less Greek, a bungler in the use of his native tongue, strangely incapable of close observation or thought, and generally without marked intellectual interests in any direction.

Uniformity is its initial absurdity; whereas a democracy, instead of requiring educational leveling, is the very form of society in which the greatest individual diversity should be encouraged, subject always, of course, to fundamental ethical restraint. The richness of our civilization depends on our capacity for developing and utilizing the special turns and aptitudes with which genius comes gifted; and under general social conditions which bear strongly toward mental and moral sameness, intellectual inequality must be prized and sought, if democracy is to be lifted above the dead level of mediocrity.

In the very first place, then, the class system cannot handle unusual endowments; it wastes them. A child, it is true, may occasionally skip a grade, tho there are considerable practical difficulties in the way of this; but even then, he can do only what the "least fit" can do. His exceptional native advantages for the pursuit, say, of language or mathematics, history or literature, go for naught. The "least fit" cannot do these things at that age; neither then may he. The "least fit" must take his language lessons, his grammar, his arithmetic, and no more, in this way or that; so then, must he. The "least fit" can finish this attenuated curriculum in thirteen years; his more capable brother may be allowed, near the start, to save a year; later, even that is almost impossible. Fortunate youth if, outside of school, some proper employment for his unrequired abilities may be found; in most cases, however, study loses all its zest, and interest in intellectual pursuits is permanently destroyed.

The system costs even more dearly the gifted, but less sturdy. These it quickly conforms to its ideal pattern of mediocrity. Its mechanical and unyielding routine makes, for the most part, short work of the delicate tints and hues of

child nature. They are very soon overlaid with chalk-dust, and wiped away with the universal eraser. Only the irrepressible, indifferent genius with a strong tincture of heedless mischief comes out of the ordeal unreduced—except in his "average," which has suffered seriously from "bad deportment."

I have in mind a boy of still another type whom, once and for all, the class system wrecks. He takes hold of a new idea very slowly, too slowly for the class pace; but once fairly begun he develops rapidly, much too rapidly for this same pace. For example, I have lately read Cæsar with such a boy. Nothing could have been slower than his start, tho he had been very patiently prepared for it; everything was hard for him—the words, the ideas, the style. We read a few paragraphs, sentence by sentence; then went back and did them all over, repeating this process until he felt at home. After that he could be left to his own devices; he quickened his pace daily, overtaking and passing boys who in the beginning had been sorry for him. What can the class system do for such? They "fail" at the very jump; they never take hold at all, tho their future contains unknown possibilities.

And, finally, the class system does nothing even for the stupid boy. For him it maintains its impoverished curriculum; it is he that makes the enrichment of the curriculum beyond a limited point impossible. Yet in the end it fails with him, too. It cannot rouse him from lethargy. Stupidity, like genius, is a varied thing. It has its points of attack—likewise its points of invulnerability. The class system allows no discrimination between them; it can give no opportunity to explore, to experiment. After presenting a course of study devoid of interest, excitement, or difficulty, but "within reach of the ordinary boy," the amazed teacher finds that it is just the ordinary boy that, in very truth, remains most entirely outside *its* reach. For the stupid boy, whose supposed needs and capacity have dictated its general method, the class system ends by doing practically nothing at all.

The objections to the class system are, however, not limited to its slowness and inflexibility; its fundamental purpose has been superseded. It did not in its origin, it cannot now, even

remotely, contemplate the culture of the individual child, the only rational end of education, as now conceived. It aimed at the diffusion of the mere tools of knowledge—reading, writing, arithmetic, geography. Some rare, indispensable virtue was supposed to reside in these humble subjects; no man could be a good citizen without them; with them, any man was fairly equipped for life. Such was the gospel of common-school education. The last half century has exploded many optimistic delusions, among them the sovereign sufficiency of common-school education, which has been relegated to the limbo where the millennial virtues of universal suffrage and free trade sleep in "innocuous desuetude."

In order, then, to embody the modern ideal of complete individual development, the solution of educational difficulties must, I think, be a radical one—nothing less than the abolition of the impenetrable class phalanx. I propose to substitute for the human staircase small groups, say of twelve children, taught individually by a single teacher for many consecutive years. The practice of ignorant or blind experimentation thus ceases at once; the mental lock-step is broken; every child makes its own pace; a curriculum is made for each pupil, based both as to subject and method on its own needs and nature, so as to utilize its native advantages, strengthening its weak points, developing its strong ones. The teacher establishes intimate relations with his pupils; he can take time to study and learn them; and the whole course of this work is determined by his interpretation of this knowledge in the light of his wider experience. Such teaching may, at any rate, be thoro and intelligent, as the class method cannot possibly be. The teacher can help the child to make out the line of least resistance, can discover the point where its unawakened interest may be roused; where, forgetting the disgust which school routine ordinarily inspires, the young mind may delight to bring all its unused energy to bear. Not only does the child learn more; he sees some use for himself. He is not left to wander in the wilderness of self-ignorance from which the American boy's sole refuge is "some business where he can make money." What severer strain can we impose upon the

character of a young man than to let him drift into life absolutely without spiritual or intellectual activity along any line, anxious above all to escape from the boredom in which for twenty years his elders have, for the most part blindly, restrained him, without once seeking or providing for his energies the uses to which from birth and circumstances they were most surely adapted?

The demand which the individual method makes upon the teacher is evidently tremendous; no precise plan of work is predetermined, tho, as a matter of fact, it will appear that, with proper tact and adaptability, most children can successfully and delightedly learn whatever they need to know. In the main each child recites separately; combinations of children vary in different subjects and are constantly subject to readjustment; the exercise of special insight and judgment on the teacher's part is thus steadily required. The character of the teaching body and its remuneration must therefore rise to increased responsibility and a far larger proportion of highly trained men and women be drawn into the field of primary and secondary school work.

Seven years ago, influenced by these considerations, I determined to find out what could be done with ordinary boys and the usual subjects, if class distinctions were entirely abolished. My experiment began with eight boys, of various degrees of ability, and almost the same age. I proposed to discover, in the first place, whether without changing the common curriculum, I could not arouse greater enthusiasm and develop greater mental and moral force than I had ever been able to secure in a classroom. The favorable result may be set down to reduced numbers; but, in point of fact, as soon as I began to feel the ground firm under my feet, I permitted the number to increase. Simultaneously I introduced other features; for example, for children under fourteen I abolished study at home. They were expected to prepare their work at school, to ask my assistance, when it was needed. The advantages of this are obvious. I saw the source of every difficulty, learned the qualities and habits of every mind, and was thus enabled to adjust subjects and tasks closely to the needs of each indi-

vidual. I am convinced that, in large measure, home work on the part of young children is responsible for the helplessness of both pupil and teacher. The former, unable to help himself, relies on parents or brothers and sisters; the latter never knows what is the child's work and what not; but the class system cannot dispense with home work. A considerable part of the common course of study was soon dropped. I cut down enormously the time given to grammar, abolished much of the arithmetic (sections like partial payments, etc.), began German as soon as possible,—at six, when fortunate enough to catch a child so early,—French a year or two later, Latin at ten or eleven, algebra the next year, did away with English "readers" wholly, substituting for them real literature, based upon which was a daily written composition. At first sight this may look like pressure; it was just the reverse. These children worked only from 8.30 to 1, with a recess of thirty minutes at 10.45. Those under fourteen did no home work at all. Yet their achievement was enormously greater than that of children of the same age in the graded schools, and at far less nervous cost. Tho the greatest diversity, in point of aptness for various studies was at once disclosed, I discovered that practically all children could be interested in and taught the subjects required for college admission; I found, too, that even where special interest was not aroused, the child's own will could be very successfully appealed to. In other words, children obeyed with an alacrity I had not seen before. Their own consciousness of aptitude along one line or another gave them a degree of self-confidence that made an appeal to their intellectual and moral pride highly effective. I have very, very rarely seen a boy who, when this relationship between us was once established, when his own dignity was once aroused, would say "I can't." And the same was true of boys who, from one cause or another, had never taken kindly to school life. I came into frequent contact with boys who had "failed"—some of them from native stupidity, others from mere lack of application. Tho the chances of reclaiming a boy to study diminish rapidly after seventeen, I am convinced that even at and after this age, a tactful teacher can frequently

succeed with those whom the helplessness of the class system has failed to stir or to subdue; and to this organic helplessness I attribute almost wholly the "failures"—those who actually fall below the minimum "average," as well as the far larger class who "pass" without in reality caring about school at all, or perhaps even positively disliking it.

We have missed none of the supposed advantages of the classroom. Rivalry and emulation were increased, as far as I wished, by judiciously "speeding" each individual. (In fact, I perceived that the class system makes rivalry almost impossible, since it can allow it so little scope.) Occasionally I made combinations of capable, but listless boys, with those eagerly pushing ahead, which proved exceedingly valuable. I found thus, that well-endowed boys could master the highest college requirements very readily at sixteen; that almost without exception it could be done at seventeen. Very few of the boys who did this had come to me under twelve, their previous years having been in most cases almost wasted in the usual flabby occupations of public or private schools. I think it certain, therefore, that children, beginning at seven, could without pressure and without effort, working in the way I have described, accomplish more than the Harvard requirements by seventeen, provided that not more than two or three teachers had divided this period.

But there are other consequences, following the abolition of the class system, that are perhaps not less important than the saving of time. With the class system perishes also the system of morality springing from it; the practically unavoidable spirit of antagonism, which makes the teacher a fair mark for the wit and ingenuity of his pupils; the false method of estimating merit by averages, which puts a premium on small shrewdness, superficial readiness, and plausibility, and permits a child to enjoy a clear conscience, regardless of his actual effort, provided only his good marks outweigh his bad ones. In its place there arises a real intimacy between teacher and pupil, which deepens with their years of friendly intercourse. They become workers together; a close personal bond connects them. Punishments and penalties, like rewards and premiums,

drop away unnoticed. Instead of coercion or inducement from the outside, the latent loyalty and enthusiasm of child character are awakened. Teachers labor ordinarily under the child's distrust. A child has not time to understand one teacher before he gets another. And, indeed, often enough, the sincerest teacher counsels in utter ignorance of the problem before him; the child feels the sermon to be hollow mockery. But the intercourse of years provides a substantial basis for helpfulness. The teacher's work becomes something more than drilling an unresponsive mind in fractions and parsing. He becomes one of the main influences in molding its ambition and character, which indeed powerfully react on each other.

And here, indeed, lies the main advantage of individual instruction, in that it allows an effort, adapted to both the mental and moral nature of the child. The prevailing class method restricts, prohibits, forbids. But it does not touch the springs of action. Instead of flexibility of intelligence, for which alone there is hope, in these days of swift change in social and economic conditions, it offers diffused knowledge of the A B C; instead of independence and strength of character, it offers the uncertain reliance of good conduct enforced by pain and penalty. It cannot do otherwise. How shall the personality of the teacher really penetrate the class-wall? In a few months the "class" will be whirled on to another "room," and the teacher be confronted with a new set of enigmas. All he can do meanwhile is to repress, in the sure knowledge that in the playground untutored impulse will regain full freedom. But—abolish the "staircase," let the teacher start with a dozen boys with whom he will spend many years. Now it is worth his while to study them; he will become their associate and friend. Can he not hope to influence their tastes, their habits, their ambitions? He is working at the very sources of character, during all these years, and, besides, these boys, knowing what they can do, will go to Cambridge at sixteen or seventeen, instead of nineteen.

ABRAHAM FLEXNER

LOUISVILLE, KY.

V

THE SUPERINTENDENT AND THE BOARD OF EDUCATION [1]

It is necessary to begin this discussion by defining certain terms which have an important legal as well as educational bearing on the subject under consideration, and for the additional reason that clear conceptions may be reached in regard to the functions and duties of boards of education and of those whom boards employ.

Under the school law or charter creating a board of education, it is self-evident that the corporation itself is an artificial, intangible being, existing only in contemplation of law, and since all personal rights die with the person upon whom those rights are bestowed, it has been found necessary and convenient, for the advantage of the public thru its representatives, that particular rights, duties, and privileges should be continued by constituting artificial persons who may maintain perpetual succession. These artificial persons are designated as "bodies politic," "bodies corporate," or "corporations"—that may sue, or be sued, plead or be impleaded, in any court of law or equity in the United States. The object of a corporation is to bestow the character and properties of individuality on a collective and changing body of men. A corporation is clearly then a creature of law, and its leading function is governmental—consisting of legislative, quasi-legislative, administrative, and executive. A corporation, such as a board of education, has power and authority cast upon it by law, under the action of the inhabitants of a specified locality, to exercise in local matters, subordinate to the jurisdiction of the State, particular limited functions of self-government—legislative, supervisory, or directive, and frequently judicial, and such other collateral duties as may be deemed necessary or desirable for attaining the object for which the corporation exists.

[1] The writer has in mind the needs of smaller cities and of towns.

Corporations vary, owing to the conditions and limitations of the statutes under which they are created and the objects they are designed to promote.

The law of corporations in general is that the corporation must act within the sphere of its authority, and it will not be held answerable to the individual for ill consequences of its mistakes, if committed to the discretion of the members of the corporation, however gross they may be in matters strictly legislative or judicial. In its executive and ministerial actions, as distinguished from the acts of officers clothed with independent power, a corporation is responsible for its trespasses and other infractions of individual rights, or for its negligence.

For the misdoing of its regularly appointed agents, including those officers who act under its positive and direct commands, it is responsible; but not, strictly speaking, for actions which the agent does outside of the sphere of his legitimate authority.

In Missouri a school board is a corporate body, and it intrusts nearly all its work to agents who exercise a large measure of discretionary authority, and in such a manner as each agent deems best. While in the discharge of such duties as are clearly prescribed, and acting strictly within the sphere of instruction, the employee will not be held responsible for the ill consequences of a careful and honest exercise of discretionary authority. But while legislatures may create, modify, or destroy certain corporations by legislating them out of existence, yet their contracts, as such, nevertheless remain in full force and effect. It frequently happens that by an act of the legislature a school board is abolished and a new one created instead, but the teachers employed by the non-existent board discharge their duties, as if nothing had occurred, for the period of the appointment. This rests upon the theory that a necessary part of the machinery of government cannot be absolutely destroyed, unless something else is provided to continue its function. That is, such a corporation, in some form, has a perpetual existence. This kind of delegated power survives all changes in government, and it is neccessary in order to protect the people from intolerable burdens. Yet no legis-

lature can bind the people of a State forever. A future legislature has the same power to repeal a law that a former one had to enact it when vested rights are not interfered with. While a legislature may therefore create, modify, or extend the authority, or even destroy a corporation, no law can be passed impairing the obligation of a contract when once legally entered into. Now a school board, created as it is under the law of the State, is a changing body; oftentimes its members are preoccupied with other duties; therefore it stands to reason that the agent employed by the board to look after, direct, and carry forward special lines of work, should occupy the position of special and confidential adviser of the board in all its relations of whatever character pertaining to his duties. The superintendent is pre-eminently such an agent, duly authorized and fully empowered to execute the will of the board.

Should the superintendent or other employee misrepresent, or knowingly misinform, the board on any particular point, it is fraud; if honestly done, it is a mistake, and if on account of weakness of intellect alone, it is gross ignorance. Fraud and deceit, by him who is trusted as a confidential agent, are regarded as the most odious things in law.

It should be borne in mind that the members of a board of education are elected for a short term of office; they serve without pay, and they are entitled to expert testimony from those whom they employ and to whom the interest of the general management of the schools is intrusted.

The central power is vested in a board of education. Its chief function is to put the schools into operation and to provide all the means and agencies for the successful accomplishment of the work. Its organization implies the authority to make all the necessary provision and to employ agents to put all its machinery into action. The board, in compliance with the statutes under which it operates, represents the legislative as well as the judicial department of the system, and it delegates certain powers to the superintendent, principals, and teachers, which said employees can enforce with energy, promptness, and firmness of purpose. Responsibility is distributed and rests directly on all employees; on the superin-

tendent in proportion to his sphere of action, and on various special teachers or supervisors, principals, teachers, and employees. Quick action can be secured when necessary in all departments of the system.

For the sake of clearness, the relation between the superintendent and the board may be grouped under the following heads:

1. Administrative. 2. Financial. 3. Educational; divided somewhat after the manner of work the board is called upon to perform.

Administrative—This question assumes that between the board of education and the superintendent a perfect understanding in regard to the management of the schools exists, and that the sole purpose of both is to bring the schools to the very highest degree of efficiency with the agencies at their command. All issues, so often unnecessarily or injudiciously raised, concerning the prerogatives of the board, or the delegated rights of the superintendent, are also excluded from this discussion, because, in the writer's opinion, if both parties are desirous of acting uprightly, no such conflict can possibly arise. That one should happen to be placed temporarily in charge of a system of schools whose motives are not in harmony with honest, faithful labor and the improvement of the schools over which he exercises authority, lies within the range of a narrow probability; or that a person may be elected a member of a school board whose motives are along the line of personal aggrandizement, may occasionally happen; yet the writer assumes that both the board and the superintendent are in the positions they occupy, because they are qualified to discharge the duties devolving upon them individually and collectively. It is assumed, furthermore, that the school board is organized for the purpose of transacting the business which comes before it in a businesslike manner, and not for the purpose of making speeches before an audience, or to be reported to an admiring constituency thru the morning papers. There is no more necessity for a member of a school board to make speeches in the transaction of routine business than there is for a bank director, or railroad manager, to arise and deliver himself dur-

ing a consultation on purely business matters. Neither should the superintendent become intoxicated with the sonorous qualities of his own voice, and keep it ringing in dulcet strains in his district.

Financial—The superintendent is the executive officer and counselor of the board in all matters pertaining to the monetary affairs of the school district. He should know what expenditures will be needed, the amount of taxes to be levied, the purchasing of sites and erection of schoolhouses, the appliances needed for teaching purposes, the schoolroom supplies, teachers' salaries, the limit to which taxation may be carried with safety, and beyond which it must not be pushed. He must stand as a check to prevent the board from making present, unnecessary expenditures, or contracting obligations which impoverish, but in no wise enrich the schools. The writer has no sympathy with that policy which, under a misapprehension of facts, induces school boards to spend all the money possible, under the plea that the more spent for education the better. Money may be thrown away or wasted on schools as in any other public or private enterprise. Let money be judiciously expended is the only safe and satisfactory course to pursue in order to avoid financial embarrassment and reactionary movements.

A careful, prudent superintendent should know the temper and sentiment of the people among whom he lives, and he should know all the burdens that fall upon his community in regard to State, county, and city taxes, as well as the special taxes for certain necessary improvements. He must be familiar with the tax-paying ability of the people, and whether they, in general, are prosperous and can procure money easily, or are sorely pressed to get money at all with which to meet their obligations. Embarrassments have to be reckoned with as much or more than temporary prosperity. I emphasize the financial side because it is the one that is usually neglected by most superintendents. School boards, so far as my observation extends, are moreover anxious and willing to do what they believe to be for the welfare of the community in which they reside, and it is here, at this point, that a prudent superin-

tendent can be of most service in advising his board. He has in mind a complete map of the school district, and he knows in what particular localities the school attendance presses with the greatest force, and he should inform his board of all the facts pertaining to the additions to be made to houses already erected, or the locations of new buildings, without the intervention of local committees which too frequently have some real estate speculation just back of the curtain.

The evils springing from financial recklessness in expenditures, and the crowding of the ward school course of study with all things imaginable or conceivable, are two of the chief sources of dissatisfaction and discontent with city school systems in many sections of the country. In regard to the financial policy to be pursued and the vast interests at stake, there should be the most cordial co-operation between the board and the superintendent. The superintendent is practically the determining factor in advising what should be done as well as what should be avoided. Whatever is agreed upon should be taken as the decision of the board when once recorded, and in no instance should this be departed from unless by order of the board. Unity of action is of the most vital importance. If by word or action the board and superintendent antagonize each other, it will only be a short time till one or the other must yield, or the disagreement will infect and undermine the entire system.

The superintendent is supposed to be familiar with the best schoolhouses in the country, and to be an expert, in part at least, as to the construction, seating, heating, lighting, and ventilating of schoolrooms. He should advise the board as to the best and most convenient arrangements and appliances that he has seen or knows of in other cities as well as the cost thereof. Unless he can direct the board in such matters, they may secure the services of an architect whose knowledge is out of date, or never was up to date, and whose skill is away below par. Under such guidance buildings may be erected that have not a single redeeming feature. Very often just where the board most needs advice and guidance it is not to be found. Only a few men not architects can read the plans and specifi-

cations of a building and understand them. The superintendent should be in close consultation with the architect while he prepares the plans and specifications, to insure the best and most convenient schoolhouses.

As to the supplies for the schoolroom, such as blackboards, maps, charts, books, and so forth, there should be perfect unity of action between the board and the superintendent. If he is the eye of the board as well as its executive officer, he should be familiar with what is needed, the qualities of the material, and how much is required; or should a change in text-books be desirable, he is in duty bound to keep the board informed as to the best in the market.

Principals and teachers, too, become importunate at times. Each wants the earth. They plead with the members of the board, and the members hesitate. At this point it is the duty of the superintendent to plant himself firmly between those who want and those who can, in part, supply wants. There are persons so constituted that they want everything and more, too, while a minority never ask except for what is absolutely necessary. This is clearly traceable to the two different conceptions persons living and working side by side may have about the legitimate use of public money. The one is lavish and the other believes in using public money with as much prudence as he would his own. Thus the superintendent frequently relieves the board from embarrassing itself. When a board steps aside once, all other needy ones quote the precedent as a law.

Educational—The course of study has already been mentioned. It is usually prescribed, in part, by legislative enactment, at least so far as essential branches are concerned, and this is within the legitimate sphere of the State acting as the agent or instrument of the collective will of the citizens. The State in its legislative capacity may be regarded as the will of the people embodied in law, and this will is the supreme power, or the highest authority residing in the State for carrying on a system of schools. The State, exercising its functions as a sovereign power, usually specifies also the minimum number of branches to be taught, leaving the additional ones to each local board.

The superintendent is supposed to keep himself posted in every respect concerning courses of study and lines of management, and to know what has been tried in various cities and towns of this and other countries. Unless he is thus informed and communicates his knowledge to the board, it may undertake experiments that were exploded a score of years ago, so that one of the most important species of work the superintendent can do is to save the board from itself; because boards are often composed of members who are actively and persistently engaged in other interests lying in widely different fields, and who are liable to commit mistakes under a misapprehension of all the facts. As an illustration, cities are loading up and unloading their courses of study every year. To draw safe conclusions in such matters the superintendent should understand all the conditions under which an experiment was tried. *Apropos* is the lightening of many courses of study now going on in some of the city schools of this country at present. However, the real danger lies in the fact that the pendulum may swing too far. A course of study must always be somewhat variable, owing to the locality and pursuits in which the people are actively engaged, but I take it that what are known as the fundamental branches will remain practically the same, because they enter most largely into the daily life of nearly the entire mass of citizens. They seem to be fundamental as well as vital.

The superintendent's opportunities to know what is being done, or has been done, in the several States of the Union are ample for all purposes. Annually, the Commissioner of Education publishes the largest and most complete report issued by any government in the world. It contains condensed reports from all the civilized nations of the globe, and what the leading educators the world over think upon the different subjects and methods of instruction. Then, there are the State reports, very valuable documents indeed to anyone who cares to know what each State is doing. In addition to this are the city reports, numbering several hundred annually, and containing the very last experimental information fresh from the schools. These reports are by many educators regarded as

the best educational documents issued for the use of superintendents, principals, and teachers, and particularly for that class of educators who are interested in the new experiments tried each year, and their results. The ripest thought, however, is published annually in the *Proceedings* of the National Educational Association. No superintendent can afford to be ignorant of this treasure house of educational literature, embracing the very widest range of topics. When there are added to these sources of information the educational journals issued weekly, semi-monthly, and monthly, the live superintendent cannot well enter a plea of ignorance of what the educational world has done or is now doing. With all these agencies and opportunities for improvement, I can conceive of no valid excuse, or even any mitigating circumstances, upon which a superintendent could base a claim of not being informed upon even the elementary notions which ought to constitute a part of his mental equipment.

School boards usually give the widest latitude to the superintendent in the performance of his duties. Being on the ground and having a general oversight, he is supposed to be familiar with the details of all kinds of school work, and is capable of giving advice as an expert to the board, principals, and teachers. He is, or ought to be, a good judge of school work and of teachers; able to strengthen weak teachers, and to guide rightly the more impulsive ones; he should be feet to the lame and eyes to the blind. As an expert he should know, whenever the exigencies of the situation demand it, when to go outside to get a good teacher to take a delicate and difficult position. It was on this very same principle that Napoleon chose his field-marshals—the most wonderful combination of military talent the world ever beheld. The superintendent must keep the board informed, or be ready to give the desired information concerning the peculiarities of each school district, and of every teacher in it, not only of the teaching force, but the temper and disposition of the patrons. Strange as it may seem, yet is true, there are perhaps not one-fourth of the principals of a school system who would succeed except in certain districts in the city in which they live. There are

principals who are not adapted to certain locations, and only a few persons can be found in any system who can fit themselves well into every school district, yet this is one of the very last things that a majority of principals and teachers do learn, but if there is that full understanding between the board and superintendent, a principal whose limitations are well known will never be transferred to a district in which he will be a failure. This is also a very delicate subject to handle in a log-rolling school system, and, small as it may appear, the annual wreckage along this line is amazing. Nor does it end here. Principals and teachers are frequently clamorous for a change, and may importune the members of the board; but, again, the only safe plan is to advise with the board and explain the situation clearly and impartially. Numerous instances have occurred in my experience when teachers had to be transferred because of friction with the principals, and perhaps neither was to blame—incompatibility of temper.

There do come times when the board and the superintendent differ on certain lines of policy to be pursued, and unless an amicable agreement is arrived at, the superintendent should acquiesce or resign. I have no sympathy with that class of malcontents who continually criticise the actions of a school board or a superintendent, but have not the manhood to step down and out, as any gentleman would do who has a single spark of self-respect.

At times a board, or a member of it, wants definite information along a certain line, and the superintendent is the only one who can furnish that information. As the adviser of the board, he ought to furnish the information, and if required, give his reasons for his conclusions.

The superintendent stands between the teaching force and the board, helping the one and counseling the other, and he has a public as well as a personal duty to perform. The board, the superintendent, and the teaching force mold public sentiment largely in a community. Reports, too, oftentimes reach the board that place a teacher in a wrong light, and the superintendent is the only one who can set the matter properly before the board, and he should do so without any mental reservation.

It is human nature for the superintendent to respect some members of the teaching force more highly than others, because he has found them worthy of respect and confidence; but he must, nevertheless, meet out exact justice even to those who are least deserving. A man who carries his whims or personal grievances into his judicial decisions is unworthy of confidence, and cannot retain the respect of his associates.

Another relation which deserves mention in this connection is the disposition manifested by some superintendents to shift all responsibility to the board of education. There are many little matters of petty detail that a board should never be bothered with, and the superintendent who is continually running to the board with such frivolous affairs is sure to lose the respect of his board in a short time. Responsibility should be distributed, and where distributed it should rest heavily on that person who has voluntarily accepted it with all that belongs to it. The shirker is never a safe person to trust. A school system is one of distributed responsibility, and he who is unwilling to bear manfully and willingly his proportionate part has no place in the work. Hence, the understanding between the superintendent and the board, and between the superintendent and principals and teachers, should be clear, definite, and comprehensive.

As a line of policy I have endeavored to settle all matters of detail and of routine without troubling the board of education; but in all cases in which some fundamental principle is involved, or the line of general policy is involved, then I have consulted with the board. Neither do I regard it as a wise measure for the superintendent to usurp any functions that belong to the board. He must, above all things, know how to obey as well as how to execute a law.

One of the superintendent's chief duties is to prevent waste in teaching, and unless he is an educator, instead of a mere schoolmaster, he never can accomplish the task of lifting up a corps of teachers so that they take in a wide horizon and vivify their teaching. From his general knowledge, rich in thought and experience, he should bring fresh to his teachers the best that has been found and applied in those great underly-

ing principles of education, upon which all sound, scientific work rests. It is as much his duty to imbue his board with these principles as it is to stimulate and fill his teachers with energy and intelligent enthusiasm. He creates opportunities for his board and corps of teachers to do their very best work, and in this way he impresses his individuality in every direction.

The superintendent's personality must be an active force, felt in the entire school work along every line, and it must be known and appreciated by the teachers as a body, notwithstanding the fact that there are some who never see anything in its proper perspective. To set the machinery of life in motion in a system of schools is no ordinary work, but this is what the superintendent must do if he keeps up with the movement of life-force as it is manifested in the best kind of work in the schoolroom. He must cause the same ideas to take possession of his school board as he himself is imbued with. He must be an inspiration and a stimulus, and he must exert his influence among the teachers, the pupils, the board of education, and the community.

A figuring superintendent, of a percentage turn of mind, living somewhere east of the 90th meridian, parcels out the daily routine of the superintendent as follows:

(*a*) Making out directions for each lesson as the class work proceeds in all the branches taught in the schools, 30 per cent.

(*b*) Examining pupils' written work, 10 per cent.

(*c*) Visiting schools, 10 per cent.

(*d*) Conducting teachers' meetings, 5 per cent.

(*e*) Making written inquiries of teachers regarding the mental characteristics, attainments, deficiencies, aptitudes, aspirations, qualities of character, etc., of every pupil in the school and examining answers, 25 per cent.

(*f*) Instructing the teachers in the subjects in the course of study and in the history and principles of education (by written questions and directions for investigation), 15 per cent.

(*g*) Organization work, 5 per cent.

(*h*) The work of the superintendent should be done thru written communications, directions, and questions addressed to the teacher.

This is a scheme for advisory work, or supervisory, with the teachers and percenting things generally. It shows what the superintendent regarded as essential matters, and how much time should be given to each important subject. Some of the large percentages the author devotes to each subject appear to me to belong in part to the principal of the school who is desirous of bringing up the work in each subject to about the same standard, relatively speaking.

In striking contrast to the outline of duties herein enumerated, it affords me very great pleasure to submit the following extract from the pen of that keen-sighted superintendent, Aaron Gove of Denver, who says:

"While theoretically the city superintendent is but the executive officer of the board of education, practically, wherever his lot is cast, he is the chief power. Boards of education often are composed of members who are actively and persistently engaged in other interests. They are not consulted, and ought not to be consulted, in the detailed management of the schools. It is seldom difficulties occur in the superintendent's life that have their rise in the board of education. The board is but a reflex representation of the people; seldom independent or beyond the influence of public opinion, even when public opinion is rash or unreliable. The lawmakers have remembered this usually in providing for the gradual, not sudden, change in the composition of boards.

"It follows from this that the administration of a given superintendent depends little upon the board of education, but upon the character of the schools on the one side and the opinion of the people on the other. The diplomacy of the superintendent is, as is all diplomacy, a fine art when cultivated to a high degree, and exceedingly helpful to the city and to the schools. Thoughtless observers call diplomacy 'policy,' thereby giving it a narrow name, and too often the inference of some sort of crookedness. True diplomacy does never sacrifice principle.

"The superintendent stands as an equalizer of radical opinion on the one side and on the other. An advanced and truly modern course of study, prepared by teachers, may be

assailed, because of failure to comprehend. The superintendent stands encouraging the teachers and explaining to the people."

As an actual fact, I spend from seventy to eighty per cent. of my time in visiting schools, and seeing the work, and in helping the teachers. A course of study outlines the minimum work to be done, and it is the duty of the superintendent and principal to see that it is followed in spirit, if not in form, in each school. The superintendent should be able to give model recitations or to suggest improvements to teachers not only in recitations, but also in methods of study and the manner or scheme of presentation, and to impress with the help of the teachers the aim of each recitation.

From motives of prudence and success, it is of the utmost importance that there should be the most complete and satisfactory understanding between the board of education and the superintendent. Each should trust the other implicitly, and counsel together on all important matters. This should be agreed upon at the beginning. All consultations should be free and frank, so that no misunderstandings could possibly arise concerning any line of action.

An enumeration of the duties conferred on the superintendent by the board, or delegated to him by virtue of his position, are usually as follows:

1. To exercise a general supervision over all the schools of the city; to see that the rules and regulations are uniformly and faithfully observed and executed in all departments, and to devote himself exclusively to the duties of his office.

2. To visit the schools, examine into their progress and condition, the classification of the pupils, note the means by which any defects can be remedied, and the general efficiency of the schools promoted.

3. To keep the board constantly informed in regard to their school system and the systems of other cities, their plans of organization, government, methods of instruction, and such other matters as may assist the board to legislate wisely for the highest interest of the district.

4. To prepare all necessary blanks for the use of teachers and to prescribe rules and regulations for keeping the same.

5. To give prompt attention to all cases of misconduct of pupils, which the principal or teacher and parents cannot settle, and to suggest such remedies as may seem possible and proper.

6. To fill temporary absences or vacancies in the teaching force that may occur between board meetings.

7. To transfer pupils from one school to another; to examine classes, or cause them to be examined, in order to ascertain their standing in certain branches; also to examine teachers, or cause them to be examined.

8. To make reports to the board, and at the close of the year to set forth in an annual report a particular view of the schools in general and to make such recommendations as he may deem advisable.

9. To attend all meetings pertaining to his department, and, at the request of any member, to attend any meeting of a special committee and to advise such committee on any subject submitted for their consideration.

From this enumeration of duties it is evident that the superintendent should be the eye and the heart of the board, and that in all relations, his connection with the board is necessary, vital, and inseparable.

JAMES M. GREENWOOD

SUPERINTENDENT OF SCHOOLS,
KANSAS CITY, MO.

VI

RAILWAY GEOGRAPHY

The importance of making a general knowledge of the geographical location of railways a part of the education of pupils of secondary schools is undeniable. In the United States, Canada, and Mexico the need of such knowledge is greater than in other countries because in them the distribution of population and industries has been less dependent on natural geographical features and more dependent on the artificial factor of railway communication. Most of North America has been settled and developed as one section after another has been made accessible by railways; and the future relations of the sections are dependent for their maintenance on the continued existence of the lines that now make them possible. In no other country are railways so essential to the life of society as in the United States, as evidenced by the fact that it contains nearly one-half the mileage of the world. Viewed as means of transportation, railways are artificial rivers, and as such, in many respects, improvements on nature. The mileage of the railways of the United States is more than four times that of its navigable rivers. From a purely practical standpoint, a knowledge of the railways of the United States is more useful to the common man than a knowledge of its rivers, lakes, and bays. Yet railway geography is not taught in the schools. While the pupil is expected to learn that Dover, the capital of Delaware, is on Jones creek, he is not taught what railways connect New York and Chicago. An examination of any geography in current use in elementary schools or high schools will readily show how completely the subject is ignored.

The importance of the subject is generally conceded. Publishers and writers of text-books of geography readily admit that it ought to be taught, but say they can find no place for it either in their text-books or in the curricula of the schools. It

is frequently urged that the subject has no claim to a place in "political" geography, but without going fully into the question, it is hard to say what would be left of the ordinary text-book of political geography if all economic facts were to be excluded from it. Some teachers are in the habit of supplementing their text-book work in geography by distributing among their pupils time-table "folders" for them to study; others make similar use of copies of "railway guides" for the purpose; but there are manifest objections to such plans. If there is no place in a general text-book of geography for the subject, it seems important enough for a separate text-book; but there are also serious objections to that plan, the chief one being that the text-book would be too expensive. The question is not, then, whether railway geography ought to be taught, but rather how it ought to be taught. In suggesting an answer to the question, some general considerations, and then a formal plan, will be presented.

1. *Railway systems must first be studied as units*—Before 1850 railways were regarded almost entirely as local lines. Each State aimed to secure for itself a system of internal improvements consisting of railways, canals, and wagon roads. Moreover, they were intended largely to connect bodies of water or rivers. In Ohio and Indiana, the aim was to connect Lake Erie and the Ohio River; in Illinois, Lake Michigan and the Ohio and Mississippi rivers; in New York, the Hudson River and the Great Lakes. Since 1860, however, the tendency has been to ignore State lines, and the railways have become national or inter-State in character, while the connection of water routes has become a secondary consideration. Another tendency during the same time has been toward the consolidation of competing and connecting lines, resulting in *systems* of railways with their main lines between commercial centers and branch lines "gridironing" the contiguous territory. Broadly speaking, each system has its own strip of territory, just as each river has tributary to it the valley that it drains. What is called by students of railways questions the "territorialization" of railways has been wellnigh accomplished. Consolidation has proceeded so far that about forty-

five systems include about seventy-five per cent. of the railway mileage of the United States. The pupil could not be expected to study the minor lines, but only the large systems; just as he is now expected to study the large bays, lakes, and rivers to the exclusion of inlets, ponds, small rivers, and creeks. Of each system of railways he ought to know the general route of the main lines and branches, the States in which they lie, the principal cities on them (and especially the termini), and the points at which they reach important bodies of water.

2. *After the railway systems have been studied as units, large divisions of the country must be studied with reference to railway systems within them*—Not only must the railway systems be studied with reference to the territory, but the territory also, with reference to the systems. The United States and Canada may not be very exactly divided into large districts on the basis of their railways; a more convenient but less instructive basis would be that of common termini; a few large systems occupy parts of more than one district. There are, however, in North America, seven such districts described roughly as follows:

(*a*) New England and Southeastern Canada, or the territory east of the Hudson River, Lake Champlain, and the St. Lawrence River.

(*b*) The North Atlantic, Great Lakes, and Ohio River region, having its western termini at Winnipeg, Chicago, and St. Louis, and its eastern termini at Quebec, Montreal, New York, Philadelphia, Baltimore, and Norfolk.

(*c*) The North and Central Mississippi Valley, north of the Ohio River, including the valley of the lower Missouri on the west and extending to Duluth on the north, and Detroit, Toledo, Cleveland, and Cincinnati on the east, with Chicago for a center.

(*d*) South Mississippi Valley, Gulf of Mexico, and South Atlantic region, bounded by the Ohio and Potomac rivers on the north, by the Atlantic Ocean on the east, by the Gulf of Mexico on the south, and by the Mississippi River on the west.

(*e*) The Southwest, from the lower Mississippi and lower Missouri rivers to the Rio Grande.

(*f*) The West, from the lower Missouri and upper Mississippi rivers to the Pacific Ocean.

(*g*) Mexico.

Such lessons would be in the nature of reviews for the study of the systems of railways in their relations to one another, the systems having been studied separately in previous lessons. The pupil would be expected to learn from such lessons the several systems in each State, the systems that come in contact at the principal cities, the relative importance to each State and city of its several railways, and the several systems reaching important rivers or bodies of water.

3. *The study may best be pursued separately and with a specially prepared text-book*—If it is true that the railway system must be made the primary unit of study, it is exceedingly difficult to see how the work could be combined with the regular work in geography, in which the unit of study is quite necessarily the State or group of States. The railways, in their later development, have quite generally ignored State lines and have divided the country into strips extending across several States, not into compact parts, like most of the States. Again, when groups of States are studied in the regular work, they are usually so arranged as to comprehend *like* States (making homogeneous groups), such as those bordering on the North Atlantic or South Atlantic, or Gulf of Mexico, or inland States devoted largely to mining industries or some form of agriculture or commerce. The function of railways and most other means of transportation is to unite *unlike* regions, to carry agricultural products from agricultural States to manufacturing States and to carry back manufactured goods; consequently the maps suitable for ordinary work in geography would be absolutely unsuitable for studying railways; the termini of the systems would be more than likely to be found in different maps. As far as the shape of the maps is concerned, those in the ordinary text-book of geography are usually as nearly square as possible; those intended for the study of railway geography would have to be decidedly oblong. The objection would apply as fully to a "commercial" as to a "political" geography.

All the general facts of the railways of North America could be easily taught in twenty lessons, without taxing the energies of either teacher or pupil. Of the twenty lessons, twelve could be on systems of railways (in groups), four on territorial divisions (reviews), three on territorial divisions (in which the systems are not studied in other lessons), and one for a general review.

The study could best be assigned for the term of school directly following the term in which a grammar-school geography has been completed. In addition to teaching new matter, the work would be of value as a review, to some extent, of the work in geography done in the grammar school. In studying the territorial divisions and physical features of the country from a new standpoint, that of transportation and intercommunication, the pupil's knowledge of them would be made more substantial; *e. g.*, he would be impressed with the fact that there is an immense arid region in the United States between the Missouri River and the Pacific coast, when he noticed how few " feeders " the main lines of the railways have in that part of the country; in fact, he could tell quite accurately where the fertile soil of the Missouri Valley ends by observing where the branches of the railways end. The study would be profitable in colleges and universities in connection with lectures on transportation questions, especially in view of the lack of such instruction in preparatory schools.

It is hardly necessary to suggest that it is unwise to substitute " railway guides " and " folders " for proper text-books. Besides being unwieldy and otherwise inconvenient in use, they magnify unduly the importance of some lines to the disparagement of others; and the teacher in most cases is unable to supply a corrective. The subject needs digesting, simplifying, and correlating, an adjustment of its several parts to one another—and that is the proper work of a text-book. In the absence of a text-book it is a waste of time to attempt the use of such substitutes.

In the light of the above considerations, a formal plan of lessons is presented below. Each lesson would have to be accompanied by a map showing the railway studied, its termini

and other principal cities, the States thru which it passes, and the principal rivers and other bodies of water reached or crossed by it. If a lesson covered two or more systems, they would have to be shown in different colors or be otherwise distinguished. In the scheme of lessons set forth below, the heads of the lessons alone are given, except in the case of the fourteenth title, which is accompanied by a map and set of questions for the purpose of illustrating the general plan.

Twenty lessons in railway geography

I Railways of New England and Southeastern Canada: (1) Intercolonial Railway; (2) Grand Trunk Railway (east of St. Lawrence River); (3) Canadian Pacific Railway (east of St. Lawrence River); (4) Central Vermont Railroad; (5) Fitchburg Railroad; (6) Boston and Maine system; (7) Boston and Albany Railroad; (8) New York and New England Railroad; (9) New York, New Haven, and Hartford Railroad.

II (1) Grand Trunk Railway; (2) Canadian Pacific Railway (east of Winnipeg and St. Paul).

III New York Central system (including the New York Central and Hudson River Railroad; Rome, Watertown, and Ogdensburg Railroad; West Shore Railroad, Michigan Central Railroad, Lake Shore and Michigan Southern Railroad, etc.).

IV (1) The Erie Railroad; (2) Delaware, Lackawanna, and Western Railroad; (3) Philadelphia and Reading system.

V Pennsylvania system.

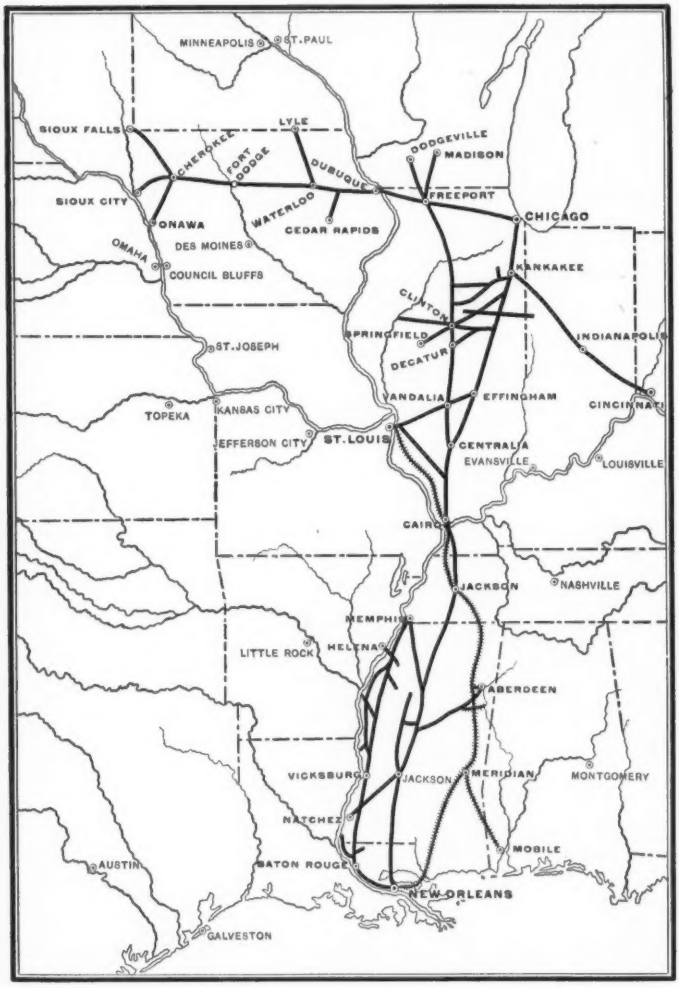
VI (1) Baltimore and Ohio system; (2) Chesapeake and Ohio Railroad.

VII Review: Railways of the North Atlantic, Great Lakes, and Ohio Valley region (the lines included in Lessons II, III, IV, V, and VI).

VIII (1) Wabash Railroad; (2) Toledo, St. Louis, and Kansas City Railroad; (3) Cleveland, Cincinnati, Chicago, and St. Louis Railway.

IX (1) Northern Pacific system (Wisconsin Central lines); (2) Chicago and Northwestern Railway; (3) Chicago, Mil-

waukee, and St. Paul Railway; (4) Illinois Central Railroad (north of Ohio River); (5) Chicago Great Western Railway.



X (1) Chicago, Rock Island, and Pacific Railway; (2) Atchison, Topeka, and Santa Fé Railroad (north of Ok-

lahoma); (3) Chicago, Burlington, and Quincy Railroad; (4) Chicago and Alton Railroad.

XI Review: Railways of the North and Central Mississippi Valley (the lines included in Lessons VIII, IX, and X).

XII (1) Norfolk and Western Railroad; (2) Southern Railway; (3) Seaboard Air Line; (4) Central Railroad of Georgia.

XIII (1) Plant system; (2) Florida Central and Peninsular Railroad; (3) Jacksonville, Tampa, and Key West Railway.

XIV (1) Illinois Central Railroad; (2) Mobile and Ohio Railroad.

1. Describe the route of the Illinois Central Railroad. Thru what States does it pass? What is the general direction of its lines? What are the principal cities located on it in South Dakota? in Iowa? in Wisconsin? in Illinois? in Missouri? in Tennessee? in Mississippi? in Louisiana? in Indiana? in Ohio? What large rivers and bodies of water does it reach? At what principal point does it reach the Missouri River? Lake Michigan? the Mississippi? the Ohio River? At what point does it reach tide water?

2. Describe the route of the Mobile and Ohio Railroad. Thru what States does it pass? What is the general direction of its lines? What are the principal cities located on it in Missouri? in Illinois? in Tennessee? in Mississippi? in Louisiana? in Alabama? What large rivers and bodies of water does it reach? At what points does it reach the Mississippi River? the Ohio River? At what points does it reach tide water?

XV (1) Louisville and Nashville Railroad; (2) Nashville, Chattanooga, and St. Louis Railway; (3) Kansas City, Fort Scott, and Memphis Railroad.

XVI Review: Railways of the South Mississippi Valley, Gulf of Mexico, and South Atlantic region (the lines included in Lessons XII, XIII, XIV, and XV).

XVII Railways of the Southwest: (1) Missouri Pacific system and Gould lines in Texas; (2) St. Louis Southwestern system; (3) Missouri, Kansas, and Texas Railway; (4) Atch-

ison, Topeka, and Santa Fé Railroad (south of Iowa); (5) Southern Pacific system (southeast of California).

XVIII Transcontinental Railways: (1) Canadian Pacific Railway; (2) Great Northern Railway; (3) Northern Pacific Railroad; (4) Union Pacific Railway and Central Pacific Railroad; (5) Atchison, Topeka, and Santa Fé Railroad; (6) Southern Pacific system.

XIX Railways of Mexico: (1) Interoceanic Railway of Mexico; (2) Mexican Central Railway; (3) Mexican National Railroad.

XX General review (covering all the lines in the foregoing lessons and having special reference to large cities—railway centers).

JOHN P. DAVIS

NAMPA, IDAHO

VII

THE MICHIGAN STATE NORMAL COLLEGE

Michigan has long been famous among the States for her devotion to education. In fact, even in the days of her unorganized territorial existence, the foundation for a liberal school system had been laid. But the real plan of the work was not outlined in all its scope nor did actual construction begin until the great tide of immigration from the East during the early 30's swept the State into the Union. The great majority of these early settlers came from New England and brought with them their traditional ideas of education and government; and it was primarily due to their energetic demands that Michigan was so soon and so heartily enlisted in educational work. In 1837 Michigan became a State, in 1841 the State university began its career as a leader of thought and progress. With a good public-school system, crowned by a university, there was still lacking a normal school for the preparation of skillful teachers.

As early as 1836 Hon. John D. Pierce, whose name is synonymous in Michigan with public education, who had then been recently elected superintendent of public instruction and who was the first incumbent of that office, recommended the establishment of a normal school similar to those of Prussia. In subsequent reports he and his successors in office kept agitating the question before the legislature and the people. These determined efforts led, in the year 1849, to the enactment of a law providing for the establishment of a normal school. The first building was dedicated in 1852 and the school formally opened in 1853. This was the first normal school west of the one at Albany, where one was established in 1844. Besides these there were no other normal schools in the country save those in Massachusetts.

The years that have passed since its founding have so far justified the act that to-day Michigan State Normal College

ranks in this country and abroad among the best, and as worthy to stand in its place beside the famous State university.

The early years of institution were years of struggle. The growth in enrollment seems slow in comparison with the rapid strides of later days. That was no doubt in part due to the relatively low standard of teaching required by the State. When we recall how recently education has been recognized as a science, and that Harvard elected its first professor of education as late as 1891, we cannot be surprised that the rank and file in a distant western State, as Michigan was in those days, did not at once place the true value upon sound professional instruction. The school had to make a place for itself not only among the people but even among teachers, for they too were slow to see the need of professional training. Up to 1870 the enrollment was but 231, and ten years later it had increased to but 298. The next decade, however, marked a new era, a dawning recognition of the school's value, the enrollment in 1890 reaching 909 and the following year passing the thousand mark.

It is the purpose of this article to give some of the reasons that have contributed to the success and high rank of this institution, and to sketch briefly some of its salient points and characteristic features.

Among the reasons for its success may be mentioned the loyal support it has received from the people. Dependent for maintenance upon the biennial grants of the legislature, it has never called in vain. The school has always been near to the hearts of the people. Its graduates, going out into hundreds of communities and there exemplifying by their lives and successful work the high character of training which the school was giving, won for their *alma mater* an abundant harvest of good-will and confidence. The usefulness of the school to the State is never called in question.

Another important factor in its growth has been that the State has not in the past dissipated its energies upon several normal schools—a policy which is prone to drag all down to a low level of doubtful efficiency—but has wisely used all its available resources for the development of a single institution

which should command the respect and win the admiration of the citizens. The school has therefore not been hampered by lack of funds nor by such sectional jealousies and struggles as are usual where several rival schools are clamoring for support and patronage. All citizens and all legislators have combined in furthering the interests of Michigan's single normal school. This fostering care has made possible a notable expansion in the work of the school and has led within recent years to a radical change in its character and sphere of activity. Originally and for many years the field which the institution occupied lay largely within the limits of secondary education. But during the past decade, along with constantly increasing requirements for admission, there has been a corresponding expansion in the curriculum. In 1888 there were 58 classes daily, in 1898 there were 160, and this with no great increase in the enrollment, but with a greatly increased average attendance. The faculty numbering less than twenty-five in 1888 numbered more than fifty in 1898. Along with a higher standard of work came a rapid increase in the number of high-school graduates entering the school, and proportionate decrease in the number of those graduating on the short courses. At present more than seventy-five per cent. of all students have finished high-school courses, and about eighty per cent. of all students entering go out on the life certificate course, and about one-third of these secure high-school positions.

A recognition of the fact that the school had changed its base from secondary to collegiate work, and that many of the departments were offering work fully equal in extent and quality to that required for an academic degree in many colleges and universities, led the legislature, in 1897, to pass an act by which the State Board of Education was empowered to designate the school, in courses leading to a life certificate and to a degree, as the Michigan State Normal College.

The normal college being thus established as a higher school of pedagogy, it became necessary to provide additional means for the training of teachers for rural and ungraded schools beyond what the normal college could supply. Therefore, in 1877 the legislature established a secondary normal at Mt.

Pleasant in the central portion of the State, and this year, 1899, the legislature has passed a bill for a similar normal school in the upper peninsula of the State. Graduates from these secondary schools may go for higher training to the normal college.

Every institution has, or thinks that it has, certain points of distinction or excellence on which it prides itself with more or less justice. This institution has a few such which perhaps deserve mention.

As most important is the great emphasis that the school lays upon abundant scholarship as the only sound foundation for successful teaching. Thoro academic instruction far beyond any possible demands for teaching should precede all formal instruction in methods. Normal schools have suffered seriously in reputation, and not unjustly so, in the estimation of scholarly men, in that they have often allowed superficial work and the worship of devices and methods to take the place of solidity of learning. Fads of all sorts, educational nostrums and panaceas, have too often emanated from normal schools. Holding that thoro knowledge of a subject is the only proper basis for any method of teaching and that, given the "what" the "how" will largely take care of itself, this institution has established a wide reputation for sound scholarship as well as for professional skill.

Another characteristic feature, and one which has had much to do with the later development of the institution, was the early adoption of the elective system in the choice of studies. The school early recognized the need of the individual student and equivalence in culture value of certain groups of subjects arranged in parallel courses. This general principle first found partial expression in 1870, when, in place of the single professional course of four years, there was substituted an English common-school course of two years, a full English course of three years, and a modern and an ancient classical course, each of four years. This arrangement was soon followed by larger options among the languages, and by a scientific course. In 1889 the number of parallel courses had increased to no less than thirteen. This, while affording large

options, was still cumbersome and confusing in practice, and led to much difficulty in classifications.

It remained to devise some simpler scheme which should, on the one hand, recognize the need of stringent requirements in certain great lines of culture for all intending teachers, and which should, on the other, preserve the sacredness of individual aptitudes and special capacities, in whose cultivation the greatest personal efficiency lies. The proper adjustment and practical application of this true principle of election in studies was accomplished under the wise and experienced leadership of President Richard G. Boone, who began his administration in 1893 and who was quick to see and to establish that freer policy in the election of studies toward which the school had long been gravitating thru a constantly increasing number of courses. There are now but three courses: (1) A course for teachers of rural and elementary graded schools, which leads to a certificate limited to five years. (2) A two-years' course for high-school graduates. (3) A longer course for those that have had but a partial high-school or only an elementary preparation. This course is four years long, excepting in so far as it is shortened by approved credits presented by the student on entrance. Courses two and three both lead to a diploma and a life certificate. Beyond the diploma and life certificate, conditions are offered by fulfilling which the degrees of bachelor of pedagogics and of master of pedagogics may be won. In all the above-named courses a certain amount of work is laid down as required for every student. The required work includes the great essentials to all liberal education and a minimum of psychology, pedagogy, and practice teaching. Outside of this the work is elective, being limited by such rules as to sequence and preparation as are laid down by the various departments. The amount of elective work varies from twenty-five to fifty per cent., according to the course chosen.

The elective system brought with it another important feature of the work of the college, viz.: the specializing courses. Students preparing for general work, principalships, and superintendencies, are placed on a general course which includes

but few electives. On the other hand, students having special gifts, and desires for special subjects, are put on a specializing course where the number of electives offered affords them every facility for pursuing their chosen work and of preparing themselves for special positions.

The specializing courses have had a strong stimulating effect upon the various departments and have led to a very large expansion in the amount of work and in the number of courses offered. This is especially noticeable in the departments of ancient and modern languages, where the work is entirely elective. In these the amount of academic work offered is quite as large as that of many colleges, and is accompanied by professional training of a thoro and searching character. Tho the demands are very severe, the number of students specializing in the languages is very large. Other departments show a similar growth. During the current year the departments of mathematics and history have offered the following courses:

COURSES IN MATHEMATICS

I. College courses:

a. Professional:

1.	Teachers' course in arithmetic,	10 weeks
2.	Teachers' course in algebra,	10 "
3.	Teachers' course in geometry,	10 "
4.	History of mathematics,	10 "
5.	Advanced teaching,	20 "

b. Academic:

6.	Higher algebra,	20 "
7.	Theory of equations,	20 "
8.	Trigonometry,	10 "
9.	Surveying,	10 "
10.	Analytical geometry,	10 "
11.	Calculus,	30 "

II. High-school subjects:

12.	Algebra I,	20 "
13.	Algebra II,	20 "
14.	Plane geometry,	20 "
15.	Solid geometry,	20 "
16.	Elementary arithmetic,	20 "

COURSES IN HISTORY

I. College courses:

a. Professional:

1.	Teachers' course in history,	10 weeks
2.	Teachers' course in civics,	10 "
3.	Historical material and method,	20 "

b. Academic:

4.	Greek and Roman history,	20 "
5.	Continental history,	20 "
6.	American constitutional history,	20 "
7.	English constitutional history,	20 "
8.	Institutes of history,	20 "
9.	Political science,	10 "
10.	Political economy,	10 "

II. High-school subjects:

11.	United States history,	20 "
12.	Civil government,	20 "
13.	United States political history,	20 "
14.	General history,	20 "
15.	English history,	20 "

Many friends of the school feared that the increasing requirements for admission and the larger demands for graduation would endanger the attendance and separate the college too far from the lower schools. The result has been quite the opposite. The classrooms and laboratories of the college are taxed to their utmost capacity. The effect on the secondary schools of increased requirements for admission has been stimulating, and pupils come far better prepared than formerly. High-school graduates now make up the great majority of the student body, and the length and severity of the curriculum compel a longer attendance than when the conditions for graduation were easier. The average attendance thru the year is above ninety per cent. of the enrollment, while in many normal schools the average attendance is scarcely fifty per cent. of the enrollment. Another fact is that the longer and more difficult course leading to a life certificate is the one chosen by the great majority. Out of a graduating class of 325 for the last year, but 45 were on the short course.

With the present year the college makes a new departure which will no doubt bring important results. It has been

decided to hold continuous session thruout the year. This has long been a subject for discussion by the State Board of Education and the faculty. It has in a measure been forced upon the school by the urgent demand from hundreds of teachers for summer work. Most of these occupy lucrative positions which they cannot afford to surrender for more schooling, but would gladly attend a professional school in the summer months, and in the course of time secure a coveted certificate or degree. It is for these, primarily, that the experiment is to be tried. That there is a need is clear from the fact that last year no less than seventy summer schools were in session in different parts of the State. These were conducted as private enterprises and were generally well attended. The teaching in such schools as these is almost always poor and the students attending them receive little of value and no recognized credit or certificate for their work. It is confidently expected that many will take advantage of the opportunity now afforded by the normal college. The year is to be divided into four quarters of twelve weeks each, with a week's intermission after each quarter. Any three quarters are to constitute a year's work. Students of education will watch with interest the working and the results of this plan.

Theoretical principles of teaching are of small value unless they are worked out in actual successful experience. It is by the character of the training school, therefore, that the efficiency of a normal school is to be largely measured. Practice-teaching in the Michigan State Normal College includes not only work in the grades, but extends into secondary subjects for such as are specializing in them. This is under the charge of the respective departments. The grade work is supervised by the director of the training-school, and over each grade is placed a critical teacher, who by example and criticism trains the seniors placed in her charge. It is, therefore, not merely a training school but also a school of observation. The quality of results depends upon the ability of the critic teacher, the time given to the work, and the number of seniors to be trained. The teachers are excellently qualified, the time demanded for training is twenty weeks, but of late the increased

number of seniors desiring practice has quite overwhelmed the capacity of the training school. Ten years ago there were about one hundred senior teachers, now there are over three hundred. However, in a few months a large and perfectly appointed new building, exemplifying the most recent improvements in school architecture in every respect, will again place this important work on a satisfactory basis. The training school is well provided with necessary apparatus and illustrative material, and with a well-selected library. A model elementary course of study has been marked out and is being followed, embracing a co-ordination of history, science, and literature, rather than a concentration upon any one of these.

The courses in professional instruction have kept pace with the enrichment and expansion of the academic subjects. In the last decade they have nearly doubled. About one-third of the average long course is given to professional work. Professional courses cover not only elementary subjects, but each has its professional work in secondary subjects as well designed for those students that are preparing to teach special branches. In each case a good knowledge of the subject must precede the study of methods. In addition to formal professional work it should not be forgotten that in a normal college every subject, even if called academic, is taught from its professional side and with the professional spirit. The ultimate aim of the institution—the preparation of successful teachers—is never lost sight of. In 1897 a purely professional course of one year was provided for college graduates.

The buildings of the school are mostly modern in conveniences and construction. The property value is estimated at $350,000. Among the more recent buildings is the gymnasium, which for its size and cost is one of the best in the country. The department of physical training was established in 1894. There are three teachers in this department and twelve classes daily. All students must take at least a year's work in the gymnasium. Advanced elective work is provided for those that are fitting themselves for teaching physical culture.

The laboratories for physical and biological sciences are well

adapted to the needs of the school. The general library numbers about 20,000 volumes. The value and efficiency of this library cannot be measured by the number of volumes composing it, but rather by the character of the books and the use made of them. Few libraries are better selected and perhaps none is more used. Last year there was a daily average of 1200 calls for books. In addition to the general library are department libraries numbering from two to four hundred volumes each, which are kept in the various departments for the convenience of special students. Both the general and most of the department libraries are provided with carefully indexed card catalogues. As belonging to the equipment of the school and as possessing unquestionable educative value, mention should be made of the fine reproductions of ancient and modern art that have recently been placed about the halls and assembly rooms.

Reference has already been made to the large number of high-school graduates entering the college. These are admitted without examination, in case they come from an approved school. Schools are visited and examined, on application, at the expense of the college, by members of the faculty. Last year 720 graduates were admitted, coming from 160 approved high schools. All the higher institutions in the State, many of the academies and private schools, and more than half of the public high schools are closely affiliated with the normal college. This relation has proved to be mutually helpful and stimulating.

A normal school always feels a moral responsibility for the placing and success of its graduates. The close relations existing between this institution and its affiliated schools makes it comparatively easy for worthy graduates to find suitable positions. To further insure intelligent and discriminating adaptation of teacher to position, the normal faculty has this year established a teachers' bureau which, without cost to the students, act as an intermediary between school boards and those desiring positions. This bureau has already proved its usefulness in the economy of the school.

The reputation and efficiency of the college stands to-day

higher than ever before. Never before have its graduates been more in demand in this and other States. The hearty support of the people and the excellence of its buildings and equipment have done something to bring this about, but these would all be in vain were it not that the destinies of the school and its positions of honor and authority have been for years in the hands of talented men and women. The president, Dr. Richard G. Boone,[1] is a man of great energy, of large and sound ideas educationally, and of splendid executive ability. The present standing of the college is due in no small measure to his untiring efforts. He is ably supported in his administration by a faculty some of whom are men of national reputation.

It is hoped that this sketch of normal instruction in the State of Michigan may be of interest to students of education and of some value to other institutions that have to meet similar problems. Michigan's present success has been won after many years of hard experience, nor does she feel that she has attained but only that she is attaining. She has still many things to learn, for the proper professional preparation of teachers is by no means an easy problem.

B. L. D'Ooge

State Normal College,
Ypsilanti, Mich.

[1 Dr. Boone resigned the presidency in the summer of 1899, and is now superintendent of schools at Cincinnati, O.—Editor.]

VIII

DISCUSSION

EDUCATIONAL EXPERTS

The tendency to disagreement among doctors has passed into a proverb. Such disagreement, however, when it exists among those who have earned the reputation of skilled practitioners, is never as to fundamentals in either the theory or the practice of medicine, but as to the causes of certain phenomena, or as to the best among many remedies for peculiar ailments. There are, however, quacks among those who write M. D. after their names; but when we are seeking expert judgment upon mooted questions in the science of medicine we are not wise if we turn to such men for advice.

The empiric, the one whose knowledge is measured by the range of his personal experience, is always ready to recommend a panacea and, allowing but little weight to the investigations of others, will deliver off-hand opinions, tho with ex-cathedra authority, upon matters that can be intelligently understood only after the most patient and widely-extended research. All this is just as true, and the failure to appreciate it is just as dangerous, in the science of education as in that of medicine. It is only during the lifetime of the present generation that education has been granted a place among the sciences, and here, as in other fields of intellectual effort, recognition has been secured in spite of the constant and active opposition of those for whose highest interest the struggle has been carried on.

The editor of the EDUCATIONAL REVIEW has said: "Science is wholly a matter of method; it is knowledge classified and nothing more." If that be true, then wherever an educational system has been found to be conspicuously lacking in method, the effort to render it methodical has been in the interest of the science of education, and hence demanding the services of educational experts, those who in classrooms, as

well as in educational libraries, have studied educational problems; whose theories as to fundamental defects in educational systems are not hastily offered, but have been tested by personal experience before presentation.

In December, 1897, the mayor of the city of Chicago asked of the city council leave to appoint an educational commission in order, as he said, " to utilize all that is good in the present system, to discard all that is defective, and to apply new methods where needed." The system of public-school administration in this great metropolis has become so conspicuously unmethodical, and, in the opinion of very many among those best qualified to judge, so certainly a factor taken into account in the councils of municipal and party politics, that to free it from such disastrous influences a radical reorganization was demanded. As the mayor said, the present system " is seriously handicapped by having to deal with the new conditions and difficult developments in the harness of antiquated methods," and hence " a change is needed, a change is essential in regard to the educational and business conduct of the school system."

Permission to appoint such commission having been granted, eleven citizens of this city were asked to undertake, without compensation, a duty than which none could be of greater importance to the welfare not only of Chicago, but of the many millions who, tho residing outside of her boundaries, must surely be greatly influenced by the type of American citizenship that shall be developed by her public-school system. Three of the men who accepted places on the commission were members of the city council, and four others were members of the board of education, or had been members of that body. In its make-up the commission was confessedly, in politics, nonpartisan, and, in religion, non-sectarian, while the personal fitness of its members, as citizens of this " no mean city," to deal with educational questior was a guarantee that the best interests of teachers as well as of pupils and patrons would be considered in a sympathetic and unprejudiced spirit.

A year elapsed between the appointment of the educational commission and the rendition of its final and complete report. What those eleven men were doing during that time, and that

they performed the task assigned them, not as mere dilettanti, but as earnest workers who appreciated the necessity of a thoro reformation of our public-school system, can best be understood and appreciated by quoting at considerable length from the preface to their final report.

After one or two preliminary conferences the commission chose William R. Harper chairman, appointed George F. James secretary, and adopted a formal plan of work. To determine the scope of their investigations the members issued first a letter of inquiry covering various phases of school affairs. This letter was widely circulated among all classes of the community, insuring to all who desired an opportunity to offer suggestions. The commission secured further the *active co-operation of fifty prominent educators of the country* who, by personal interview and by letter, gave their aid in settling on recommendations for the report. The various subjects in reference to which suggestions were received, were classified and made topics for discussion at successive weekly meetings. Consideration was given at each meeting to the specific criticisms and suggestions of those acquainted with the Chicago schools, to a review of the experience in other cities, and to *the advice of those best qualified to speak with authority*. The commission was assisted in its work by the conclusions of similar committees in other cities, particularly in New York and Boston, by papers on city and school problems read before State and national meetings of teachers, and by the report of the Committee of Fifteen of the National Educational Association. The active co-operation of the Chicago board of education, *the corps of school superintendents, principals and teachers* and the recommendations of various individuals and clubs, enabled the commission to consider *every phase of opinion about the school system* before formulating its report. After five months of work the members held continuous sessions for one week and as a result drew up a series of "Suggestions for the Improvement of a City School System." This pamphlet was privately printed and submitted to those interested in public schools both here and in other cities. In this way the commission secured more definite opinions and was enabled during the summer and autumn to review still more carefully the general scope of the report. In November continuous sessions were held, at which the first draft of the report was read and reviewed. During December the report was again revised. *Aside from the continuous sessions held in the spring and in the autumn the commission gave thirty meetings to its work, in addition to which much was accomplished thru the labors of special sub-committees.*

In the above quotation I have italicized certain statements for a purpose which will appear farther on.

To the September number of this REVIEW Mr. Joseph W. Errant, who from 1894 to 1897 was a member of the Board of Education of Chicago, contributed an article entitled, "The Chicago school situation." Of the final report of the educa-

tional commission he says: "In the main it is a discussion of administrative measures. As a summary of some matters which have been talked about up to the present time it is quite admirable." In the brief history of the appointment of the commission given above it is seen that it was formed for the express purpose of considering the public-school system of Chicago as at present operating, and for the reason that a change in that system was imperatively demanded. Such and such only being the purpose of its creation, and the single aim of all its investigations, a careful study of the many suggestions and recommendations which make up the more than 250 pages of the quarto volume in which the report has been published would seem to indicate that the mayor made a wise selection of men, and that their work is "quite admirable," not only "as a summary of matters which have been talked about," but as pointing the way to that radical reform in the administration of our public schools the necessity for which alone justified the appointment and painstaking labors of the commission. In the opinion of Mr. Errant, however, they labored in vain, or rather they have for the time being, at any rate, merely made bad matters worse; for, after reviewing in a general way the report which was the outcome of the many sessions and conferences referred to in one of the italicized portions of the report quoted above, he says: "A new educational commission is needed, a commission made up of master minds, who, speaking from a life's experience in their work to those who have had a life's experience in the same line of work, can feel that each will understand the other." It is not clear as to what is meant by a commission of "master minds" divided into two classes (tho the experience of both has been gathered by lifelong effort in the same line of work), who are to exchange views upon educational problems. In my opinion Mr. Errant errs in his condemnation of the commission's report, qualified as that condemnation is by the faint praise I have quoted, because of the wrong point of view from which he writes. He endeavors to be non-partisan in his discussion of the Chicago school situation, but in such statements as that "the teaching corps of the city of Chicago had very little interest therein," *i. e.*, the report of the commission, he unconsciously

betrays a bias in favor of those teachers who, having triumphed in their attack upon the bill in which the commission formulated such of its conclusions as required legislation to render them operative, now claim that the measure which drew the largest attendance at the many clubs and confederations among which the more than five thousand public-school teachers of Chicago are divided, and which excited the most heated discussions that have ever been known in those meetings, was, after all, a matter in which "the teaching corps of Chicago had very little interest." Such a statement will certainly be news to the reportorial corps of this city, who for months and almost daily, while the last General Assembly of Illinois was in session, chronicled the coming and going, between Chicago and Springfield, of committees representing the many teachers' societies, all alike bent upon killing that which the singular unanimity of fearful foreboding they styled the Harper Bill.

The opposition which the proposed enactment of that bill into statutory law aroused was noteworthy in two particulars. First, in that it was confined almost exclusively to the teachers in the grammar, or, as they are now called here, the elementary, schools; neither the principals of those schools, nor the principals and teachers in the high schools, taking any part in the war waged against the bill. Second, after the dense smoke that at first obscured the assaulting host had cleared away, it was found that their attack was to be concentrated upon that portion of Section 29 in the obnoxious bill that provides as follows regarding the superintendent:

> He shall have power to appoint assistant superintendents, principals, teachers and attendance officers to such positions as the board of education shall from time to time authorize, to promote teachers and fix their grade on the salary schedule and dismiss any officer or teacher so appointed; provided, however, that all such appointments, promotions, compensations and dismissals shall be reported to the board, and shall stand as final unless disapproved by a majority vote of all the members thereof not later than the second meeting after the report is made thereto; provided further, that no teacher or attendance officer shall be appointed, and no teacher be promoted until after examination and approval by an examining board hereinafter provided for; and provided further, that every person applying for a position as teacher when approved by the examining board shall be given by the superintendent a provisional certificate of qualification for two years, which, after proof of success for this period,

shall be made permanent: and provided lastly that no teacher shall be considered definitely employed during good service and on good behavior until after such successful probation of two successive years.

The change in the present system that would be made, were that provision a part of our school-law to-day is certainly in harmony with the opinions of all those who have written or spoken with any authority upon the question of superintendency during the past ten years. Briefly, it means concentrated supervisory power and clearly defined official accountability. Its aim is perfection in the administration of our public-school system. But, says Mr. Errant: "It is not perfection of administration that the teachers of Chicago want." I wonder if a majority of even the grade teachers in our public schools are ready with a hearty Amen! to that statement? If so, then the need for the legislation that they have thus far defeated is even more urgent than the most radical reformer has supposed. It is, however, in the evident sympathy with what Mr. Errant supposes to be the fundamental cause of the opposition that the report of the educational commission encountered, that he seems to me to be considering that report from the wrong point of view.

Grant that Mayor Harrison's reasons for appointing the commission were good and sufficient, then no commission such as Mr. Errant suggests would accomplish the purpose, for it would be a sort of mutual-admiration society that would report to itself and not thru the appointing power to the public. Just such changes as were contemplated by that section of the late-lamented bill, from which I have quoted above, were strongly urged in both of the annual reports that were made by our board of education while Mr. Errant was a member of that body. In his report for the school year of 1894-95 the president said:

I maintain this to be true, that no board of education however wise and prudent, however jealous and zealous for the good name of its schools, can in the nature of things hope to act for the highest efficiency of the schools on their own motion, especially in the matter of the selection of teachers. That great trust, I am compelled to believe, should be entirely committed to the superintendent and his associates.

In the report for 1895-96, I find this:

I reiterate my solemn conviction that if you would have better equipped and more thoroly trained teachers, you must commit the selection of teachers and their general direction to the superintendent and his assistants and hold them responsible for but one thing, good schools. To appoint an expert executive officer, and then to withhold from him the free and untrammeled administration of his official function, is wholly absurd and insensate.

If from this opinion Mr. Errant dissents, as he must if he sympathizes with what he so positively declares to be the position of our teachers in regard to reform in the administration of our school system, then he illustrates the proverb that I cited in the beginning of this review of his article, but among those who unanimously indorse the views as above quoted from the annual reports are the "fifty prominent educators of this country" who actively co-operated with the educational commission in the compilation of their exhaustive report. Among these are the superintendents of the public schools of Philadelphia, Pa.; Peoria, Ill.; Brookline, Mass.; New Orleans, La.; Newark, N. J.; Denver, Col.; Kansas City, Mo.; Toronto, Canada; Cleveland, Ohio; New York, Boston, Washington, St. Louis, and Baltimore, and among the well-known teachers and writers upon educational themes of every character, whose advice was sought and secured, the following: Andrew S. Draper, Charles W. Eliot, William T. Harris, Daniel C. Gilman, Nicholas Murray Butler, Seth Low, and David Starr Jordan. If the new educational commission that Mr. Errant suggests were appointed, where would they look for abler collaborateurs than these men whose views, indorsing the recommendations of the educational commission, appear in footnotes that, in the aggregate, form fully one-half of the report. Says Mr. Errant: "Much that has been done by Mayor Harrison and the school board during the past two years has been reactionary." It is significant that the critic of the mayor left the school board just two years ago. "Democracy," says Mr. Errant, "with its social ideals, has possession of the teaching force of the city of Chicago." I wondered when I read that if he was thinking of the violent attack made upon the "Harper Bill" on a certain Sunday afternoon upon the platform of a large labor union, and by two of the most prominent among the women of our teaching force, who there declared that the

passage of that bill meant the reduction of every teacher in our schools to the position of a slave, who, as such, would be unable to educate freemen. That sounded much more like demagoguery than like democracy; but both of those speakers were, a few days after, highly honored by their fellow-teachers.

In my judgment no contribution to public-school literature of such value as the report of our mayor's educational commission has been made during the last twenty-five years, and in deciding upon its special value to the public-school system of Chicago, my opinion is based upon visits made to more than sixty of our public schools, in the course of which more than half an hour was spent in each of more than four hundred different classrooms.

As an adverse critic of the work of the educational commission Mr. Errant seems to be very unfortunate in the illustration with which at the close of his article he seeks to clinch his argument against the report. He says: "Mere administration often seems like the exterior of a great and noble building, from the outside view the perfection of beauty and of art. One goes up the magnificent stairway in front of the building and rings the bell. The door is opened. One steps thru the door and finds—nothing."

The door-bell suggests a rather antiquated structure, but if "the door is opened" it must be by someone within. How, then, is it that, "stepping thru the door" (an athletic feat), one finds nothing? He would certainly find the one who opened the door.

Accepting Mr. Errant's invitation to prophesy of Chicago's public-school system when the educational commission's recommendations by bill and otherwise shall have become controlling, I ask him to note over the main entrance of the building the name, "Chicago's Reorganized Public School System" and if he will now ascend the magnificent stairway and "press the button," the door will be opened; and stepping thru the doorway he will be greeted, not as he would now be by the janitor, but by the Superintendent in Charge, Mr. ——.

AARON H. NELSON

CHICAGO, ILL.

IX

REVIEWS

The history of Greece—from its commencement to the close of the independence of the Greek nation—By ADOLPH HOLM. New York: The Macmillan Company, 1894–98: 4 vols., 432, 535, 456, 634 p. $6.00.

Tho the great work of Grote remains, and probably will long remain, the ablest and most thoro treatment of Grecian history in existence, the development of historical method and the accumulation of new historical material during recent years make it necessary to supplement and to correct the results of his labor. Curtius has improved upon Grote in the treatment of the non-political elements of history, as geography and landscape, art, literature, and personal character. Yet, notwithstanding the superior resources at his command, the work of Curtius is far less substantial than that of his predecessor. For instance, his first volume is as a whole already antiquated, because it proceeds largely from the short-lived view that the migrations and settlements of the various Greek races may be determined by a study of their cults. Then, too, his theory as to the moral decline of the Athenians in the fifth century B. C., and again in the fourth—a theory at once self-contradictory and unsupported by evidence—vitiates a large portion of his history. It must be borne in mind, also, that since the first appearance of his work, critical methods have been sharpened to such an extent that much which Curtius accepted without questioning is now set down as doubtful or as absolutely unfounded. The need of a history of Greece which should represent the scholarship of the present day is, therefore, obvious. Several such works have recently appeared in Germany, one of which, Holm's *Griechische Geschichte*, has been translated into English. Commanding the resources of the classical scholar, at home in Greek archæology, numismatics, and other auxiliary studies, and in thoro touch with modern historical methods, Holm has written a history which will undoubtedly have a lasting value. As it rests upon

independent research, the reader may expect to find thruout the work fresh ideas, new and suggestive points of view. Recurring nearly to the standpoint of Grote, the author draws a sharp line of distinction between myth and history. The worn-out process of making history by rationalizing myths,—by extracting from them their "kernels of truth,"—he has totally discarded. In like manner, the author aims thruout the work to let the reader know what is well-established fact and what is mere inference or hypothesis. His estimate, too, of men and of measures, is usually deliberate and sound. Hence he is one of the most trustworthy of historians. The scope of the work is broad, embracing the whole life of the Hellenic race in its varied aspects. It deals, accordingly, not merely with war and politics, but with the social, intellectual, and artistic development of the race as well; and while the interest naturally centers in Sparta, Athens, Thebes, and Macedon, in the Greek continent and the Ægean Sea, a fair proportion of the work is devoted to the outlying settlements of the Greeks on the Black Sea, in Africa, in Italy, and in Sicily.

Tho Holm has the scholar in mind, he speaks primarily to the general reader. His notes and citations, placed accordingly at the end of the chapter rather than at the foot of the page, are few and brief—useful for testing the author's views rather than for an exhaustive study of his sources. The moderate compass of the work will commend it to many to whom Grote and Curtius seem formidable. Three volumes cover the classic period; the fourth volume, which carries the narrative far beyond the Roman conquest, is the only good continuous treatment of this late period accessible to the English reader.

Notwithstanding its many excellent features, some fault may be found with the work. The author still clings to Lycurgus and still believes in a "Dorian migration," tho neither could endure the test of his own canons of criticism. Occasionally he seems unfair in his treatment of men; for instance, of Demosthenes, the orator. In this case, the author fails to appreciate the fact that the struggle between Philip and Demosthenes involved a conflict between two great principles, that in the person of Philip imperialism threatened the existence of local and individual freedom. Philip's cause was the stronger; that

of Demosthenes, however petty it may seem in these days of great states and empires, was the nobler and the holier cause. And as to the moral character of the orator, which Holm assails, we should judge it by the practical standards furnished by our own public men rather than by the ideal standard of the schoolmaster. Another illustration may not be out of place. It is difficult to understand why, with the slight evidence which the author adduces, he should persecute the memory of Aratus. He who built the Achæan League, the noblest political creation of the Greeks, and who as a statesman, commanded the life-long confidence of his fellow-citizens, tho not a Washington, must have possessed some admirable traits of character. Altho Polybius and Plutarch, our chief sources for Aratus, are enthusiastic in their praise of his ability and his patriotism, our author regards him as a mere "political boss." Another weakness of Holm is his desire to be exhaustive. Some pages he has made unreadable by massing facts which have no apparent value, except perhaps to the specialist. This holds especially for those parts of his work in which the sources do not furnish material for a continuous narrative.

To the shortcomings of the original may be added those of the English version. The translators, thru their careless errors, have sometimes played havoc with the sense. More difficult to remedy than this occasional carelessness is their unfortunate style. The clear, vigorous, and even graceful language of the original they have translated into awkward, disjointed English; at times they are unnecessarily obscure.

Yet we may be thankful that the work has been done, and may count it a great gain to the historical scholarship of England as well as of America. To those who are interested in promoting the study of classical history it would be gratifying to see a copy of Holm's *History of Greece* placed in every college and secondary-school library in the country, and to see the teacher of Grecian history making it the chief reading and reference book of his classes.

GEORGE W. BOTSFORD

HARVARD UNIVERSITY

X

EDITORIAL

A Superintendent who Superintends

After years of clerical and routine school supervision, New York is the proud possessor of a superintendent of schools who has ideas and who ventures to express them. The experience is as exhilarating as it is novel. The first annual report of the city superintendent of schools to the board of education of New York, for the year ending July 31, 1899, is a noteworthy document from any point of view. The school politicians have kindly made it famous as well.

The report was presented in print at the October meeting of the board of education. While lying upon the desks of the members, and before the resolution to print and distribute it had been voted on, a member from the borough of Brooklyn, himself not wholly innocent of the ways of politicians, observed in it some passages that commented unfavorably on several forms of educational activity that are dear to the Brooklyn school politicians and to their majesties, "the people" of Brooklyn. So this valiant defender of "the people's" rights, spoke as follows:

"Mr. President, I object to the publishing of the city superintendent's report until it has been passed upon by the committee on school system. I find that in a criticism of the local committee system he has made statements about the Brooklyn board which are untrue. As president of that board I must object to the publication of this report until the matter has come before the committee."

This was a truly Brooklynese idea. No action of an educational officer, even to the official expression of his views and recommendations, without action by a blessed committee, "local" if possible! Superintendent Maxwell, however, whose greatest charm, as well as his greatest source of strength, is his incapacity to please Tammany Hall and the Brooklyn local committeemen, responded:

"I am empowered by the charter to make this report in its present form, and I will not allow it to go to the committee for censorship. In this I am

sustained by several decisions of the highest courts, which have declared that such a report must be accepted without change."

But of course the report was sent to the committee, and equally of course the committee will find that it is in the hands of the courts if it attempts to mutilate the report, and in the hands of indignant public opinion if it attempts to suppress it.

The passage which excited the Brooklyn representatives was this:

> The borough of Brooklyn is permitted by the charter to retain for the present its local committee system of appointing, transferring, and promoting principals and teachers. This exception to the general method of nominating teachers which is to prevail thruout the city, is provided for by the following sentence found in section 1103 of the charter: "The system or mode of nomination in this section provided for shall not be held to deprive any school board that has been a board of education of the right to appoint, to promote, and to transfer principals, teachers and other members of the teaching staff without such nomination, in any borough, in which, at the time this act takes effect, said board of education enjoys such right of appointment without nomination by superintendents, until the same shall have been adopted by the School Board of said borough." The last clause of this sentence enables the School Board of Brooklyn to get rid by a simple resolution of a system of appointing and promoting teachers that has retarded progress ever since the Brooklyn city school system was established. It is hardly neccessary for me to say that I have known local committees that did excellent work in the case of individual schools; but, in the main, the effect of the system has been injurious. There are certain characteristics of the system, which appear on the surface, that must condemn it in the eyes of thinking men. Some of these characteristics are as follows:
>
> 1. The young women who are licensed to teach in the borough of Brooklyn are compelled to visit the places of business and residences of members of the School Board to sue for appointment, and to bring political and other pressure on the members to secure places. Under this system a young woman who is without friends or influence, no matter what her attainments may be, usually receives an appointment, if at all, only after her inferiors who have "influence" have been provided for. The counter proposition which I submit is that teachers should be nominated in the order of their standing on the eligible list, and that every teacher licensed should have an equal chance for appointment. I submit that after a teacher has given up several of the best years of her life to the work of preparation for the teaching profession and has successfully passed all required tests, she has a moral right to an opportunity to demonstrate what she can do in the classroom without being subjected to the ignominy of suing for an appointment and without being compelled to resort to the tricks of the lowest grade of politician.
>
> 2. The same unseemly and unprofessional devices that are often required to secure appointment are not seldom employed to secure promotion. The result is that many principals and teachers have been pro-

moted to places for which they are ill-adapted or wholly unfit, to the great injury of the cause of education in Brooklyn.

3. The local committee system has driven many of the best men that ever sat in the Brooklyn board to resign or refuse reappointment because they felt that they had not the expert knowledge necessary to select teachers for particular positions and because the continuous importunity of teachers and their friends for appointment and promotion was utterly distasteful to them.

4. Under the local committee system it is almost impossible to bring about the transfer of principals and teachers from school to school when such transfer is necessary for the good of the system, because each local committee has supreme control of its own school and there is no central power clothed with authority to transfer a teacher from one school to another.

5. The system is deprived of the inestimable advantage of having experts in educational work assign each teacher to that work for which he or she is best qualified. By some local committees the principals of schools are consulted as to the assignment of teachers to classes, but as a rule this is not so.

It will be argued, perhaps, that, notwithstanding the local committee system, great progress has been made during the last few years in the Brooklyn schools. The statement is undoubtedly true. I can myself testify, however, that every step of that progress was retarded and that much progress was prevented by the local committee system.

The charter provides the Brooklyn School Board with the opportunity to rid the Brooklyn schools of the incubus of the local committee system by passing a simple resolution. Shall not the resolution be passed?

Every word of it is true, of course. Superintendent Maxwell saw this local committee system, from the inside, for a dozen years or more. If pushed, he is likely to produce an unpleasant and confounding array of names and dates. This REVIEW has looked into the Brooklyn local committee system a little and has expressed the opinion that that system is the greatest abomination to be found in the educational system of any American city to-day. It will have to go in time, but the time will be hastened and the teachers and children sooner set free from the wire-pullers if Superintendent Maxwell will turn on the light at frequent and irregular intervals.

Newspaper Comments

The New York newspapers, educated by the struggles of the past decade, spoke out bravely on the side of right and of decent schools. We give a few characteristic extracts:

In accordance with his duty under the charter, Mr. Maxwell, superintendent of the public schools of Greater New York, has made a report to the central board of education. In that document he has censured the system of appointing and promoting teachers in the Brooklyn schools. Thereupon the Brooklyn Commissioners of Education have had the report referred to a committee for the purpose of having the criticisms stricken out.

This is foolish and wrong. Moreover, it is a distinct interference with the right and duty of the superintendent. Be he right or wrong in his criticisms, it is his right to make them. It is his right to have his report published, and not a version made by the commissioners.

The Brooklyn commissioners should show, if they can, that Mr. Maxwell's strictures are erroneous, but they have no business to mutilate or suppress his reports.—*Sun* (Rep.), October 13.

There is no question that the criticism made by Mr. Maxwell on the Brooklyn plan of regulating the appointment and promotion of teachers by local committees, with no central authority to control it, is entirely justified. The plan is bad in theory and has given rise to bad results. Mr. Maxwell's description of these results, emphatic and severe as it is, is mild in comparison with the facts as they exist.—*Times* (Ind.), October 13.

No one who reads Superintendent Maxwell's able, intelligent, and undoubtedly truthful description of the abuses connected with the appointment of teachers in the public schools of Brooklyn will be surprised that President Robertson of the Brooklyn borough board tried to have the report suppressed by the board of education yesterday. Now that public attention has been called to Dr. Maxwell's report, the less unlawful tampering with it the Board of Education attempts the less public indignation there will be against the board. Dr. Maxwell has the confidence of the community—which cannot be said of those who try to cheat the children of the people by giving them teachers whose chief recommendation is their political influence.—*World* (Dem.), October 12.

It cannot be maintained that Dr. Maxwell does not know what he is talking about, for he was long associated with the Brooklyn schools, and knows their condition better than anyone else. Neither will it do to dismiss him with the deadly charge that he "is an able and efficient superintendent, but a confirmed and inveterate idealist with a disposition to magnify his office." That precious view of the case is put forth without a wink by the Brooklyn *Eagle*, and should be put in its proper classification with the argument of "getting close to the people." It was because Dr. Maxwell was a "confirmed and inveterate idealist" that he was chosen for his position, and he is acting now in accordance with his lifelong character. If there is any spot on earth in which an "idealist" is more thoroly in place than at the head of the public-school system of a city controlled by a horde of ignorant barbarians, we do not know what it is.—*Evening Post* (Ind.), October 13.

The local committee system is and always has been bad. Both in Manhattan and Brooklyn it was a stronghold of school politics. For its preservation here Tammany fought for years, and its existence in another form

in Brooklyn has often been objected to by educational experts. Its toleration there was one of the compromises of the charter, making nominally a concession to the home rule sentiment which was supposed to fear the destruction of Brooklyn schools by some Manhattan tyrant, really a placation of the school politicians who had defended the patronage system when the question of autonomy was in no way involved. The plan of giving to a small committee the power to appoint, transfer, and promote teachers directly encourages wirepulling, just as Dr. Maxwell declares. A teacher, after passing examinations and securing a place on the eligible list, must then seek out committeemen of a certain school and endeavor to impress them by personal or political influence. If that committee has other favorites the attempt must be repeated on somebody else. It is a case of hit or miss all around, and even if the best qualified teachers secure places the chances are against their being put just where their particular abilities are most needed, while, if the assignments were made by somebody supervising many classes, much more satisfactory adjustments would be likely.—*Tribune* (Rep.), October 16.

Even the Brooklyn *Eagle*, long the rhetorical apologist for every Brooklyn school abuse, admitted that the local committee system was not perfect.

The sorriest exhibition was made by Borough Superintendent Ward of Brooklyn. He is a good man and a sincere worker for better things; but the character and extent of the malign influences in the Brooklyn schools are revealed when he feels compelled to say, in defense of his superiors: "I believe that a business man of intelligence is better qualified to run a school system than a professional educator, as he is guided more by what the people actually want." As the New York *Tribune* remarked, this is the usual plea for the spoils system everywhere. Mr. Ward must recall that statement soon, or the years to come will not be long enough for him to live it down. It is unprofessional and uneducational to the last degree, and, consciously or unconsciously, a mere yielding to the influences which surround him.

All public-school men should read Superintendent Maxwell's report. Its statistics are most instructive. Its recommendations and criticisms are invaluable. It is the work of an honest and courageous man who stands up in a community ruled by barbarians and self-seekers, and points out the path of honor and of duty. Every decent and worthy influence in New York is behind Superintendent Maxwell in his fight for the rights of the children and of the silent citizens and

against the grasping selfishness of the beloved "people"; to wit, the spoils-hunters and their friends.

The New English Board of Education Act

The act relating to a central board of education for England and Wales, to which detailed reference was made in an article printed in the EDUCATIONAL REVIEW for September last,[1] passed the House of Commons early in August, and became a law. The provisions of the act go into effect on April 1, 1900. The measure is of such importance that we are glad to print its full text below:

BOARD OF EDUCATION ACT, 1899

ARRANGEMENT OF SECTIONS

Section.

1. Establishment of Board of Education
2. Duties and powers of Board of Education
3. Inspection of secondary schools
4. Consultative Committee
5. Orders to be laid before Parliament
6. Staff, remuneration, and expenses
7. Style, seal, and proceedings of Board of Education
8. Power for President or Secretary to sit in Parliament
9. Extent, commencement, and short title

SCHEDULE

An Act to provide for the Establishment of a Board of Education for England and Wales, and for matters connected therewith.

Be it enacted by the Queen's most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows.

1.—(1) There shall be established a Board of Education charged with the superintendence of matters relating to education in England and Wales.

Establishment of Board of Education

(2) The Board shall consist of a President, and of the Lord President of the Council (unless he is appointed President of the Board), Her Majesty's Principal Secretaries of State, the First Commissioner of Her Majesty's Treasury, and the Chancellor of her Majesty's Exchequer.

(3) The existing Vice-President of the Committee of the Privy Council on Education shall also be a member of the Board, but on the next vacancy in his office the office shall be abolished, and the enactments mentioned in the schedule to this Act shall be repealed.

(4) The President of the Board shall be appointed by Her Majesty, and shall hold office during her Majesty's pleasure.

(5) The Board shall be deemed to be established on the appointment of the President thereof.

[1] See p. 178–9.

2.—(1) The Board of Education shall take the place of the Education Department (including the Department of Science and Art), and all enactments and documents shall be construed accordingly.

Duties and Powers of Board of Education

(2) It shall be lawful for Her Majesty in Council, from time to time, by Order, to transfer to, or make exerciseable by, the Board of Education any of the powers of the Charity Commissioners or of the Board of Agriculture in matters appearing to Her Majesty to relate to education, and the Order may make such provision as appears necessary for applying to the exercise of those powers by the Board of Education the enactments relating to the Charity Commissioners or to the Board of Agriculture.

Provided that any question as to whether an endowment or any part of an endowment is held for or ought to be applied to educational purposes shall be determined by the Charity Commissioners.

3.—(1) The Board of Education may by their officers, or, after taking the advice of the Consultative Committee hereinafter mentioned, by any University or other organization, inspect any school supplying secondary education and desiring to be so inspected, for the purpose of ascertaining the character of the teaching in the school and the nature of the provisions made for the teaching and health of the scholars, and may so inspect the school on such terms as may be fixed by the Board of Education with the consent of the Treasury: Provided that the inspection of schools established by scheme under the Welsh Intermediate Education Act, 1889, shall, subject to regulations made by the Treasury under section nine of that Act, be conducted as heretofore by the Central Welsh Board for Intermediate Education, and that the said Board shall be recognized as the proper organization for the inspection of any such schools as may be desirous of inspection under this section.

Inspection of secondary schools

(2) The Council of any county or county borough may out of any money applicable for the purpose of technical education pay or contribute to the expenses of inspecting under this section any school within their county or borough.

4.—It shall be lawful for Her Majesty in Council, by Order, to establish a Consultative Committee consisting, as to not less than two-thirds, of persons qualified to represent the views of Universities and other bodies interested in education, for the purpose of—

Consultative Committee

(*a*) framing with the approval of the Board of Education, regulations for a register of teachers, which shall be formed and kept in manner to be provided by Order in Council: Provided that the register so formed shall contain the names of the registered teachers arranged in alphabetical order, with an entry in respect to each teacher showing the date of his registration, and giving a brief record of his qualifications and experience; and

(*b*) advising the Board of Education on any matter referred to the committee by the Board.

5.—The draft of any Order proposed to be made under this Act shall be laid before each House of Parliament for not less than four weeks during which that House is sitting, before it is submitted to her Majesty in Council.

Orders to be laid before Parliament

Staff, remuneration, and expenses

6.—(1) The Board of Education may appoint such secretaries, officers, and servants as the Board may, with the sanction of the Treasury, determine.

(2) There shall be paid, out of moneys provided by Parliament, to the President of the Board, unless he holds another salaried office, such annual salary not exceeding two thousand pounds, and to the secretaries, officers and servants of the Board such salaries or remuneration, as the Treasury may determine.

7.—(1) The Board of Education may sue and be sued and may for all purposes be described by that name.

Style, seal and proceedings of Board of Education

(2) The Board shall have an official seal, which shall be officially and judicially noticed, and that seal shall be authenticated by the signature of the President or some member of the Board, or of a Secretary, or of some person anthorized by the President or some member of the Board to act on behalf of a secretary.

(3) Every document purporting to be an instrument issued by the Board of Education, and to be sealed with the seal of the Board, authenticated in manner provided by this Act, or to be signed by a secretary or any person authorized by the President or some member of the Board to act on behalf of a secretary, shall be received in evidence, and be deemed to be such an instrument without further proof, unless the contrary is shown.

(4) A certificate signed by the President or any member of the Board of Education that any instrument purporting to be made or issued by the President or some member of the Board is so made or issued shall be conclusive evidence of the fact.

8.—(1) The office of President of the Board of Education shall not render the person holding it incapable of being elected to, or of voting in, the Commons House of Parliament, and shall be deemed to be an office included in Schedule H. of the Representation of the People Act, 1867; in Schedule H. of the Representation of the People (Scotland) Act, 1868; in Schedule E. of the Representation of the People (Ireland) Act, 1868; and in Part I. of the Schedule of the Promissory Oaths Act, 1868.

Power for President or secretary to sit in Parliament

(2) After the abolition of the office of the Vice-President of the Committee of the Privy Council on Education, one of the secretaries of the Board of Education shall not by reason of his office be incapable of being elected to or of voting in the Commons House of Parliament.

Extent, commencement and short title

9.—(1) This Act shall not extend to Scotland or Ireland.

(2) This Act shall come into operation on the first day of April one thousand nine hundred.

(3) This Act may be cited as the Board of Education Act, 1899.

SCHEDULE: ENACTMENTS REPEALED

(1) The Education Department Act, 1856. The whole Act. (2) The Public Health Act, 1858. In section seven the words "the Vice-President of the Committee of the said Privy Council on Education being one of them."